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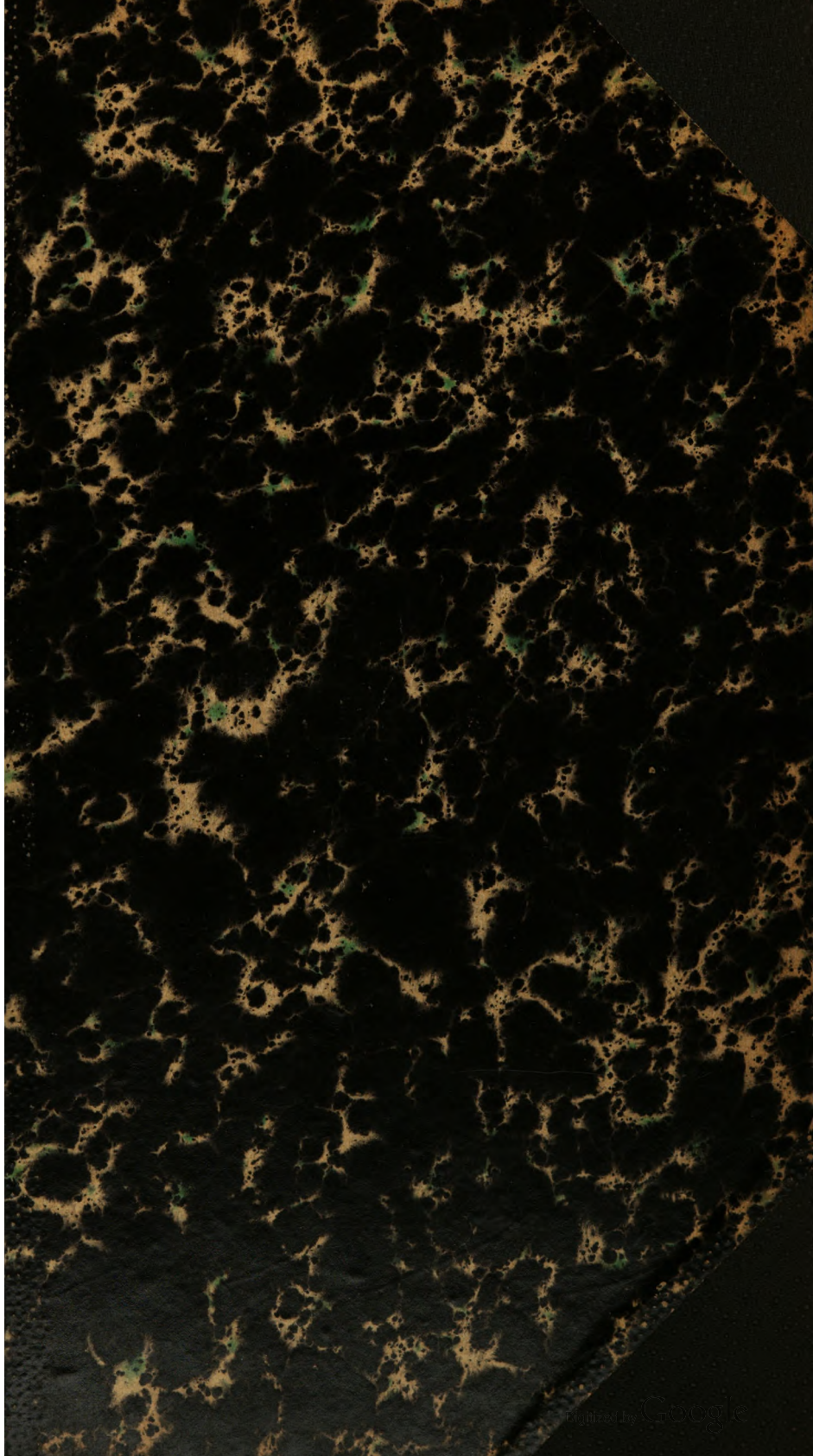
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W. G. FARLOW.

*Dr Ransom Ransom W. R. R. R.
With kind regards.*

THE

2312

BOTANY OF BERMUDA.

BY

GENERAL SIR JOHN HENRY LEFROY, F. R. S.,
ATHENÆUM CLUB, LONDON.

FROM BULLETIN No. 25, U. S. NATIONAL MUSEUM.

W. G. FARLOW.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1884.

PART II.

THE BOTANY OF BERMUDA.

BY

General Sir JOHN HENRY LEFROY, F. R. S.

(GOVERNOR OF BERMUDA, 1872-1877.)

ATHENÆUM CLUB, LONDON.

Charlton 83

BOTANY OF BERMUDA.

ERRATA IN PART II., BULLETIN NO. 25, U. S. NATIONAL MUSEUM.

- Page 35, line 26: for "pine" read *fine*.
Page 38, line 24: for "low" read *law*.
Page 45, line 7: for "Lance" read *Lane*.
Page 59, line 18: for "Ayland" read *Hyland*.
Page 59, line 21: after "wood" insert a semicolon.
Page 60, line 21: for "medeira" read *Madeira*.
Page 65, line 4: for "Vitch" read *Vetch*.
Page 65, line 17: for "tiliqua" read *siliqua*.
Page 68, line 12: for "Caffra-brom" read *Kaffir-boom*.
Page 68, line 20: for "peruiferum" read *peruiferum*.
Page 73, line 14: after "Japan-medlar" insert *Loquat*.
Page 73, line 27: for "Lip plant" read *Life plant*.
Page 79, line 26: for "thoris" read *koris*.
Page 84, line 5: for "hetorophylla" read *heterophylla*.
Page 85, line 24: for "spendens" read *splendens*.
Page 88, line 8: for "shore" read *share*.
Page 91, line 14: for "gnaphalodes" read *gnalphaloides*.
Page 96, line 14: for "aryroncara" read *argyroneura*.
Page 104, line 15: after "obscure" insert a comma.
Page 105, line 18: for "atropha" read *jatropha*.
Page 113, line 32: for "ovedoxa" read *oreodoxe*.
Page 114, line 18: for "Vershafelii" read *Vershaftii*.
Page 127, line 17: for "atropha" read *jatropha*.
Page 128, line 9: for "coriandum" read *coriandrum*.
Page 128, line 31: for "Hogwood" read *Hogweed*.
Page 128, lines 37-38: for "98" read 80.
Page 128, for line 57 insert *Jatropha*105.
Page 129, line 48: for "Pane" read *Plane*.
Page 131, line 5: dele *With*64.
Page 131, for line 10 insert *Yellow wood*56.
Page 134, line 53: for "tiliqua" read *siliqua*.
Page 134, line 60: for "Brugmonsia" read *Brugmansia*.
Page 136, line 5: for "argyroncara" read *argyroneura*.
Page 137, line 53: for "J. Jatropha" read *J. curcas*.
Page 139, line 1: for "Pipearceæ" read *Piperaceæ*.
Page 139, line 41: for "guayva" read *guaiava*.
Page 140, line 8: for "flabilliformis" read *flabelliformis*.
Page 141, line 3: for "stenataphrum" read *stenotaphrium*.
Page 141, line 12: for "Swietinia" read *Swietenia*.

THE BOTANY OF BERMUDA.

From the limited area of the Bermudas, which does not exceed 20 square miles; from their evenness of surface, which nowhere rises more than 250 feet above the sea; and from the uniformity of the soil, which is almost entirely derived from the disintegration of calcareous or coralline sand, the botanist would naturally expect a native vegetation of very little range or variety, and if he remembers their position on the eastern margin of the Florida Gulf Stream he will further expect a predominance of West Indian species among those that may exist. Both these inferences would be correct, but there are some other factors which have materially modified the result. This green oasis in the desert of Atlantic waters, so late discovered by man,* was for countless ages before that epoch, as it still is a resting place for birds in their migrations from the American continent. Man himself when he came found a soil of virgin fertility and a singularly genial climate, giving welcome alike to strangers from the north and from the south. Thus for nearly three centuries seeds and plants from the most distant parts of the world have been introduced by him, or have followed in his foot-steps and made themselves at home, until it is in many cases difficult to decide whether design or natural causes independent of human agency or mere accident have produced the assemblage we find.

For about eighty years Indian corn (*Zea mays*) and tobacco, both of them exhausting crops, were the staple products of Bermuda, varied chiefly by sweet potatoes (*Ipomœa Batatas*), and it is not improbable that the opinion which prevailed in the last century of a deterioration of the soil may have had some foundation, although the cause assigned, "the cutting down of pine and spreading cedar trees," can have had little to do with it. The cedar tree itself is the enemy of cultivation, and nothing valuable grows under its shade. Its roots run to astonishing

* About 1511.

distances, and, as every one knows who has tried to improve plantations in the neighborhood of cedar trees, they monopolize all the good soil they can reach.

"It is universally agreed," says Dr. Robertson, "that the nature of this (St. George's) and the other Bermuda Islands has undergone a surprising change for the worse since they were first discovered, the air being much more inclement, and the soil much more barren than formerly; this is ascribed to the cutting down of those fine spreading cedar trees for which the islands were famous, and which sheltered them from the blasts of the north wind at the same time that it protected the undergrowth of the delicate plants and herbs. In short, the Summer Islands are now far from being desirable spots; and their natural productions are but just sufficient for the support of the inhabitants, who, chiefly for that reason, perhaps, are temperate and lively to a proverb. * * * The Bermuda Islands, however, might still produce some valuable commodities were they properly cultivated; * * * their oranges are still valuable; their soil is also said to be excellent for the cultivation of vines."*

As the historian had never visited the islands, his opinion is only cited for the strong testimony he bears to the general opinion a century ago that they were barren. There is, in fact, but very little good soil among them; the element *silica* in particular, which enters so largely into the composition of most fertile soils, being very wanting; *potash* and *soda* present in very small quantities, and *iron*, in the form of oxide or peroxide, much in excess in the soils which are otherwise the best. The small number of deciduous trees, and the prevalence of the cedar (*Juniperus Bermudiana*), which contributes little to the soil, are also a source of poverty.

* Robertson's America, 1777, VI., p. 286.

The following table, extracted from an agricultural report drawn up by the writer in 1873, and based on analyses by Mr. F. A. Manning and others, gives a concise view of the mineral elements of the Bermuda soils:

TABLE I.—*Relative proportions of the component parts of Bermuda soils, omitting water.*

	White soil.		Red soils.							
	Manning.		Professor Bernays.	Professor Abel.	Mr. Manning.					
	No. 1, sand.	No. 2, mud.			No. 3.		No. 4.		No. 5.	
					Soluble.	Insoluble.	Soluble.	Insoluble.	Soluble.	Insoluble.
Water (not included)	0. 316	18. 134	18. 7	42. 57	16. 231	.....	6. 930	.....	23. 20	.....
Organic substance	3. 816	4. 700	.....	.....	13. 280	.....	16. 260	.....	16. 710	.....
Lime	52. 47	51. 400	.....	5. 59	3. 724	0. 431	1. 250	2. 386	10. 077	.....
Lime, carbonate of .....	.....	.....	4. 31	.....	.....	.....	.....	.....	.....	.....
Lime, sulphate of .....	.....	.....	2. 50	.....	.....	.....	.....	.....	.....	.....
Magnesia	1. 686	0. 756	.....	3. 50	0. 018	0. 550	0. 099	.....	0. 199	0. 217
Magnesia, carbonate of .....	.....	.....	3. 32	.....	.....	.....	.....	.....	.....	.....
Alumina .....	.....	.....	.....	20. 44	0. 173	16. 155	0. 120	24. 850	0. 105	9. 474
Sand and insoluble clay	0. 050	0. 047	.....	48. 70	.....	47. 980	.....	21. 910	.....	40. 670
Silica .....	.....	.....	45. 74	.....	.....	.....	.....	.....	.....	.....
Oxide of iron and alumina	0. 520	.....	43. 67	.....	.....	.....	.....	.....	.....	.....
Oxide of iron .....	.....	0. 213	.....	.....	.....	.....	.....	.....	.....	.....
Oxide of protoxide .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oxide of sesqui or peroxide .....	.....	.....	.....	13. 29	0. 047	14. 580	0. 362	30. 880	0. 046	12. 840
Potash	0. 064	0. 088	.....	.....	.....	0. 140	.....	0. 169	.....	0. 113
Soda	0. 243	0. 070	.....	.....	.....	0. 007	.....	0. 060	.....	0. 033
Carbonic acid	42. 866	42. 580	.....	5. 55	2. 666	.....	0. 836	.....	8. 676	.....
Sulphuric acid	0. 206	.....	.....	.....	trace	.....	0. 065	.....	0. 040	.....
Silicic acid .....	.....	.....	.....	.....	0. 149	.....	0. 067	.....	0. 159	.....
Phosphoric acid	0. 007	0. 124	.....	2. 93	.....	0. 742	.....	0. 676	.....	0. 681
Chlorine	0. 020	0. 011	.....	.....	.....	.....	0. 046	.....	.....	.....
Chlorides, phosphates, &c., not determined .....	.....	.....	1. 06	.....	.....	.....	.....	.....	.....	.....
					20. 058	79. 945	19. 075	80. 931	36. 012	64. 030
	102. 01	99. 99	100. 0	100. 00	100. 0		100. 0		100. 0	

Notwithstanding, however, this want of natural fertility due to the geological origin of the group, and to a cause, perhaps, remotely connected with the stormy character of the region, the abundance of rain and the genial temperature make up for many disadvantages. There appear to be few West India plants or fruits which could not be grown in the islands with a proper selection of localities. It is otherwise, however, as Dr. Rein has remarked* with many fruits belonging to northern temperate regions; many American species which on the continent descend to much lower latitude refuse to flourish or die out in Bermuda, not so much, probably, from the heat of the summer as from the

* Strawberries, grapes, figs, peaches, ripening in March and April, grow in Bermuda, but not the ordinary kernel and stone fruits.—Rein.

sustained high temperature of the winter, which is such that the temperature of the soil six inches below the surface was never found lower than $52^{\circ}.66$.

Frost is nearly, but not quite, unknown. There are but two well authenticated cases on record. On the 24th December, 1840, while frost was visible "in low situations, water in tubs was frozen to the thickness of half a crown."* On the 21st February, 1878, a thermometer on grass registered $28^{\circ}.2$. There is a tradition of snow, about 1811 or 1812;† a few flakes, indeed, fell at St. George's on the 4th March, 1874. On 20th February, 1872, the ground was in some places white with hail, which did not disappear for some hours. These facts are sufficient to show that the temperature of the air is subject to much greater extremes than are experienced at sea level within the tropics, although the vegetation partakes so largely of a tropical character.

Low temperatures occur most frequently in the month of March. During the years 1872-'77 a thermometer on grass registered below 40° F., as follows :

In December 2 times, lowest $35^{\circ}.2$ in 1876.

In January 4 times, lowest $34^{\circ}.0$ in 1874.

In February 3 times, lowest $35^{\circ}.0$ in 1877.

In March 8 times, lowest $35^{\circ}.0$ in 1877.

Notwithstanding many years of observation, the data for determining the mean temperature of the air are imperfect. Observations have only been made at 9 or $9\frac{1}{2}$ a. m., and at 3 or $3\frac{1}{2}$ p. m., and the diurnal low for the several months is unknown. While the record was kept by the royal engineers, however, a monthly term day of hourly observation was observed, and from the days so recorded some approximation to the horary corrections might probably be derived, but I prefer to give the actual observations at those hours, subject to future reduction. To these are added in the subjoined table the mean temperature of the soil at 6 inches and 12 inches depth, which will have future value, the International Meteorological Congress held at Rome in April, 1879, having resolved to include for the future the temperature of the surface of the earth among the meteorological elements to be observed.

* Mr. J. L. Hurdis, in Jones' "Naturalist in Bermuda."

† Mr. John Harvey Darrell is the authority for this statement.

TABLE II.—*Conditions of temperature and rainfall affecting vegetation in Bermuda.**

	Temperature of the air.		Temperature of the soil.		Mean rainfall.
	9 a. m.	3 p. m.	6 inches.	12 inches.	
	°	°	°	°	In.
January.....	64.0	65.5	62.0	62.5	3.8
February.....	63.7	65.1	61.1	61.4	4.2
March.....	63.8	65.5	61.5	61.5	3.6
April.....	67.4	69.3	64.8	64.9	3.3
May.....	72.0	73.5	69.9	69.5	4.1
June.....	76.8	78.8	74.5	73.9	3.8
July.....	81.3	82.9	78.3	77.9	4.0
August.....	82.5	84.2	79.1	79.2	3.9
September.....	80.2	81.9	77.1	76.9	4.8
October.....	75.5	76.7	73.4	73.7	6.7
November.....	69.8	71.1	67.2	68.1	5.7
December.....	65.4	66.4	62.9	63.2	4.0
	71.9	73.4	69.3	69.4	51.4

*The mean temperatures are given by observations extending (with some *lacunæ*) from August, 1855, to March, 1877. The temperature of the soil at 6 inches is the mean between observations at 9 a. m. and 5 p. m., apparently the hours of extreme daily range. The temperature at 12 inches is that at 9 a. m.; the daily range at this depth is under 0°·5, and is about the mean at 9 a. m.

The earth temperatures are probably very near the true mean temperatures of the air. The rainfall is not the same all over the island. It is decidedly greater in the broader and more wooded region towards the center than at either extremity, and is least about the light-house, where the island is narrow and comparatively denuded of wood. There are grounds for supposing, also, that the mean temperature at the east end, probably under the influence of the cold northeast winds of winter, is lower than in the central regions; but these are niceties not affecting the present question.

Under the conditions of climate thus briefly described the cocoanut and sugar-cane grow, but not to perfection. The writer had no success with pine-apples, although they were formerly grown in Bermuda. The orange, lemon, lime, fig, mango, banana, pawpaw, avocado pear, pomegranate, loquat, litchi, and the anona family come to perfection. Strawberries and excellent celery, with all ordinary vegetables of the table, thrive in the winter. Apples, pears, plums, cherries, almonds, apricots, nectarines are a complete failure. The raspberry and blackberry die out, and neither rhubarb nor asparagus can be grown to any satisfaction. The peach, although not now actually produced, all the trees in the island being infested by the peach fly, was very abundant twenty years ago, and therefore differs from other stone fruits, in being suitable to the climate.

The reader of the following list will notice frequent references to "the

Walsingham tract." This remarkable region is a narrow ridge, about two miles long and from a quarter to half a mile wide, which separates Castle Harbor from Harrington Sound, at the east end of the islands, and does not altogether comprise above 200 acres, including Tucker's Town. It contains nearly the whole of the indigenous vegetation of the group. A few characteristic species, such as *Randia aculeata*, *Pavonia spinifex*, *Myginda Rhacoma*, are only found at the other end, and a few are diffused here and there pretty generally. Such are *Eugenia axillaris*, *Forestiera porulosa*, and *Dodonæa viscosa*. But, on the whole, this small tract is the Mecca of the botanist in Bermuda, and his pilgrimages will be many before he exhausts it. For this we must, of course, seek a geological cause. This narrow ridge of land, honey-combed by caverns, fretted with the dissolving rains of ages, and rent by fissures, is, in the writer's opinion, the last surviving contemporary of former Bermudas that have disappeared, whose surface-rocks form the reefs that fill Castle Harbor and both the sounds, and form the northern barriers against the fury of the Atlantic. The evidence in support of this opinion would be out of place in this section. It will be evident that if such be the case, we should expect to find here, as we do find it, the greatest accumulation of those species which, not being capable of self-origination anywhere, can only have reached this very isolated spot by the slow operation of natural causes long continued. The surface of the contemporary Bermuda is not of high geological antiquity, as follows necessarily from its Æolian origin and its continuous subsidence, but what it has of antiquity is to all appearance found here.

The following is a list of 25 species exclusively or almost exclusively to be looked for in the Walsingham tract. They are nearly all West Indian; few of them American in the sense of belonging to regions of corresponding latitude on the continent.

<i>Æschynomene</i> , sp	W. I.	<i>Jatropha Curcas</i>	W. I.
<i>Ampelopsis quinquefolia</i>	A.	<i>Passiflora ciliata</i>	W. I.
<i>Asplenium crenulatum</i>		<i>Peperomia obtusifolia</i>	W. I.
<i>Asplenium myriophyllum</i>		<i>Psilotum triquetrum</i>	W. I.
<i>Callicarpa ferruginea</i>	W. I.	<i>Psychotria undata</i>	W. I.
<i>Chiococca racemosa</i>	W. I.	<i>Pteris heterophylla</i>	W. I.
<i>Dodonæa viscosa</i>	W. I.	<i>Sabal Adansonii</i>	A.
<i>Elæodendron xylocarpum</i>	W. I.	<i>Sicyos angulatus</i>	A.
<i>Eugenia axillaris</i>	W. I.	<i>Sponia Lamarekiana</i>	W. I.
<i>Forestiera porulosa</i>	W. I.	<i>Statice Limonium</i> , var. <i>Caroliniana</i> ..	A.
<i>Guilandina Bonducella</i>	W. I.	<i>Triumfetta semitriloba</i>	W. I.
<i>Ipomœa purpurea</i>	W. I.	<i>Xanthoxylum Clava-Herculis</i>	W. I.
<i>Jasminum gracile</i>	W. I.		

The species in the general list which the writer considers to be native—that is to say, introduced by natural causes irrespective of human agency, and probably earlier than the settlement of the islands in 1612—are 150 in number, distinguished by the letter A in the alphabetical index. For the convenience of the botanical reader they are here enumerated.

List A.—Species regarded as native.

Acrostichum aureum.....	W. I., A.	Eleocharis plantaginea.....	W. I., A.
Adiantum cuneatum.....	S. A.	Equisetum palustre.....	A.
Æschynomene, sp.....	W. I., A.	Eugenia axillaris.....	W. I.
Ampelopsis quinquefolia.....	A.	Forestiera poralosa.....	W. I.
Arundinaria tecta.....	A.	Guilandina Bonducella.....	W. I.
Asclepias Curassavica.....	W. I.	Heliotropium Curassavicum.....	W. I., A.
Ascyrum Crux Andreæ.....	A.	Herpestis Monniera.....	W. I., A.
Aspidium capense.....	S. A.	Hydrocotyle Asiatica.....	W. I.
Aspidium Thelypteris.....	A.	Hydrocotyle repanda.....	A.
Asplenium crenulatum.....	W. I.	Hydrocotyle umbellata.....	W. I.
Asplenium dentatum.....	W. I., A.	Ipomœa Jamaicensis.....	W. I.
Asplenium myriophyllum.....	W. I., A.	Ipomœa Nil.....	W. I.
Asplenium Trichomanes.....	A.	Ipomœa Pes-capræ.....	W. I., A.
Atriplex cristata.....	S. U. S.	Ipomœa purpurea.....	W. I.
Avicennia nitida.....	W. I.	Ipomœa sagittata.....	A.
Baccharis heterophylla*.....		Juncus maritimus.....	A.
Boehmeria cylindrica.....	W. I., A.	Juncus tenuis.....	W. I., A.
Borrchia arborescens.....	W. I., S. U. S.	Jungermannia sp.....	
Cakile maritima.....	W. I.	Juniperus Bermudiana.....	W. I.
Cakile maritima, var. † æqualis.....	W. I.	Kosteletzkya Virginica.....	A.
Callicarpa ferruginea.....	W. I.	Laguncularia racemosa.....	W. I., A.
Canavalia obtusifolia.....	W. I.	Lemna minor.....	W. I., A.
Cardiospermum Halicacabum ..	W. I., A.	Lemna trisulca.....	W. I., N. U. S.
Cardiospermum Halicacabum, var microcarpum.....	W. I.	Lippia micromera.....	W. I.
Celtis Missisippiensis.....	A.	Lippia nodiflora.....	W. I., A.
Cenchrus echinatus.....	W. I., A.	Lippia lanceolata.....	W. I.
Cenchrus tribuloides.....	W. I., A.	Lithospermum distichum.....	W. I.
Centrosema Virginianum.....	W. I., A.	Montia fontana.....	E.
Ceratophyllum demersum.....	W. I., A.	Morinda roioc.....	W. I., A.
Chara fetida.....	W. I., A.	Myginda Rhacoma.....	W. I., A.
Chiococca racemosa.....	W. I., A.	Myrica cerifera.....	A.
Coccoloba uvifera.....	W. I., A.	Nama Jamaicensis.....	W. I., A.
Conocarpus erectus.....	W. I., A.	Nepeta Cataria.....	A.
Convolvulus Jamaicensis.....	W. I.	Nephrodium amplum.....	W. I., S. A.
Dichondra Carolinensis.....	A.	Nephrodium patens.....	A.
Dichondra repens.....	W. I., A.	Nephrodium tetragonum.....	S. A.
Desmodium virgatum.....	W. I.	Nephrodium villosum.....	W. I., S. A.
Dodonæa viscosa.....	W. I., A.	Nephrolepis exaltata.....	W. I., A.
Eclipta erecta.....	W. I., A.	Oenothera biennis.....	A.
Elæodendron xylocarpum.....	W. I.	Oenothera humifusa.....	A.
Elæodendron melanocarpum....	A.	Oenothera rosea.....	W. I.
		Oenothera sinuata.....	A.

* There are five West Indian and three American species, but none of them the same as the Bermuda species.

<i>Opuntia Tuna</i>	W. I.	<i>Sceevola Plumieri</i>	W. I., A.
<i>Opuntia vulgaris</i>	A.	<i>Scirpus plantagineus</i>	W. I.
<i>Osmunda cinnamomea</i>	A.	<i>Scirpus validus</i>	W. I.
<i>Osmunda regalis</i>	A.	<i>Senebiera pinnatifida</i>	W. I., A.
<i>Panicum brevifolium</i>	W. I.	<i>Sesuvium Portulacastrum</i>	W. I., A.
<i>Panicum capillare</i>	A.	<i>Sicyos angulatus</i>	A.
<i>Panicum lineare</i>	A.	<i>Sida carpinifolia</i>	W. I.
<i>Panicum molle</i>	W. I.	<i>Sisyrinchium Bermudiana</i>	
<i>Panicum virgatum</i>	A.	<i>Solanum nigrum</i>	W. I., A.
<i>Paspalum distichum</i>	W. I., A.	<i>Solanum nigrum, var. nodiflorum</i>	W. I.
<i>Paspalum filiforme</i>	W. I.	<i>Solanum torvum</i>	W. I.
<i>Paspalum setaceum</i>	W. I.	<i>Sophora tomentosa</i>	W. I., A.
<i>Pavonia spinifex</i>	W. I.	<i>Sphagnum palustre</i>	
<i>Phryma leptostachya</i>	A.	<i>Spermacoe tenuior</i>	W. I., A.
<i>Pluchea odorata</i>	W. I.	<i>Spiranthes brevilabris</i>	W. I.
<i>Pluchea purpurascens</i>	W. I., A.	<i>Sponia Lamareckiana</i>	W. I.
<i>Polypodium plumula</i>	W. I.	<i>Sponia elongatus</i>	W. I.
<i>Polypogon Monspelienis</i>	A.	<i>Sporobolus Indicus</i>	W. I., A.
<i>Portulaca oleracea</i>	W. I., A.	<i>Sporobolus pungens</i>	S. A.
<i>Psilotum triquetrum</i>	W. I., A.	<i>Sporobolus Virginicus</i>	W. I., A.
<i>Pteris aquilina</i>	W. I., A.	<i>Stachytarpheta Jamaicensis</i>	W. I., A.
<i>Pteris heterophylla</i>	W. I.	<i>Statice Limonium, var. Caroli-</i>	
<i>Rhachicallis rupestris</i>	W. I.	<i>niana</i>	A.
<i>Rhizophora mangle</i>	W. I., A.	<i>Stenotaphrum Americanum</i>	W. I., A.
<i>Rhus Toxicodendron</i>	A.	<i>Suriana maritima</i>	W. I.
<i>Rhynchospora florida</i>	W. I.	<i>Tournefortia gnaphalodes</i>	W. I., A.
<i>Rhynchospora fusca</i>		<i>Triumfetta Lappula</i>	W. I.
<i>Rhynchospora pura syn</i>		<i>Triumfetta semitriloba</i>	W. I.
<i>Rhynchospora speciosa</i>		<i>Typha angustifolia</i>	W. I., A.
<i>Rhynchospora stellata</i>	W. I.	<i>Waltheria Americana</i>	W. I., A.
<i>Ricinus communis</i>	W. I., A.	<i>Woodwardia Virginica</i>	A.
<i>Ruppia maritima</i>	W. I., A.	<i>Xanthoxylum aromaticum</i>	W. I.
<i>Sabal Palmetto</i>	A.	<i>Yucca aloifolia</i>	W. I.
<i>Salicornia fruticosa</i>	A.	<i>Zostera marina</i>	

The distinction between this class and the next is arbitrary, and the classification has been governed by an estimate of probabilities in each case. Nature had a long reign in Bermuda. Man and the animals introduced by man have had a comparatively short period for modifying its flora. It seems safer to suppose that plants like *Guilandina Bonducella* or *Sicyos angulatus*, met with but once in a wild place and a wild state, are truly native, than to infer from their rarity that they have been introduced or have recently followed the footsteps of man.

The species then regarded as exotic, although completely naturalized, and for the most part generally diffused, that is to say, in the words of Sir Joseph Hooker, "species which have followed in the track of man or animals introduced by him, and have thus become quasi-indigenous, or naturalized,"* are 166 in number, distinguished by the letter B. The

* Sir Joseph Hooker. Lecture on Insular Floras, delivered before the British Association for the Advancement of Science, at Nottingham, 1866.

importation of seeds for *agricultural* and *horticultural* purposes for two centuries and a half accounts for a great number of chance species, especially the importation of hay from America.

The species which may also be said to be naturalized, but were originally introduced, designedly for cultivation or ornament, whose presence is, therefore, due to direct human agency, more or less traceable, and which cannot in any sense be regarded as native, 414 in number, are distinguished by the letter C.

Lastly, there remains a large and fluctuating class of plants, of horticultural but not botanical interest, which are found here and there under cultivation, but have no proper place in the local flora. They are inserted in the catalogue to complete the view of the vegetation of Bermuda, as related to climate, and as it presents itself to the visitor. These names, 215 in number, are printed in *Italics*. Many of them date no further back than the writer's term of residence at Government House, where one of his first acts was to import a professed gardener, Mr. Michael Middleton, and a skilled laborer, George Payne, from Kew. They arrived in November, 1871, and from that time to the end of 1876, few months passed without the introduction and trial of new plants. Under a friendly rivalry, many more were at the same time brought up from the West Indies to Clarence House, by successive naval commanders-in-chief, especially by Admiral Sir Cooper Key, who followed the governor's example in erecting a conservatory. The present governor, Sir Robert Laffan, has long been known for a taste for horticulture. The garden proper at Mount Langton is, unfortunately, of very limited extent, and of a light, poor soil, possessing only the advantage of abundant water. The grounds are extensive, but made up of hills and slopes, thinly clothed with soil, much exposed to northerly winds, and offering very few spots favorable for planting. It adds not a little to practical difficulties that cartage is rendered tedious and laborious by the distribution of the premises. All this notwithstanding, much was done in the years 1871-'76 to extend the flora of the island, and a considerable amount of horticultural experience gained, which should not be thrown away. The social circumstances of Bermuda are peculiar. The resident gentry are too few in number to keep up a corps of professional gardeners; the colored native laborers are rarely intelligent enough for the trade, do not appear to have much natural taste for flowers, although somewhat given to depredations in gardens, and have had very little opportunity of learning. It

would be difficult to find anywhere such neglect of ornamental planting as is observable round the cottages of Bermuda. A sort of aversion to manual labor, which survives among the whites wherever slavery has prevailed, and no doubt also something enervating in the climate, make amateur gardening less active and busy, especially among the ladies of the island, than the great advantages of the climate would lead one to expect. There are but few florists, and an inexhaustible source of pleasure has still to be better appreciated. The record of horticultural successes and failures at Mount Langton, and the presentation in one list of all the species, whether ornamental or useful, cultivated or capable of cultivation, must stimulate horticulture, and may possibly open a new industry. The director of the American Museum of Natural History, Central Park, New York, had it in contemplation, in 1876, to establish a tropical nursery in Bermuda, and there is no reason, in days when Covent Garden market is supplied with flowers from the south of France, why New York should not be supplied from the Insulas *Æstivarum*.

The writer lost no opportunity of ascertaining the names, if any, by which plants are currently known. They are comparatively few in number, and it is not easy to determine whether, for example, "Snuff plant" for *Buddleia neemda* is, like "Wire weed" for *Sida carpinifolia*, universal, or of limited circulation. For the particulars given of the dates of introduction of many now common species, the writer is chiefly indebted to the late Mr. W. B. Perot, of Par-la-ville, and to the Hon. John Harvey Darrell.

Francis Andr  Michaux, who touched at Bermuda in 1806, is the only botanist of eminence who has as yet done so. The following account of his visit occurs in "*Annales du Museum d'Histoire Naturelle*," for 1807. Having set sail from Bordeaux on February 5, 1806, for Charleston, he intended to explore the Southern States of America. On March 23, the vessel was captured by H. M. S. Leander, and sent to Halifax, Michaux being the only passenger who was allowed the privilege of going on board the Leander, where he seems to have received every attention from Captain Wetheby, her commander. Arriving at the Bermudas on April 7, they remained there eight days, and Michaux was allowed to go ashore. He gives a fair account of the general appearance of the islands, but his flora is very meager, only comprising the following species: *Juniperus Bermudiana*; *Verbascum Thapsus*; *Anagallis arvensis*; *Leontodon Taraxactm*; *Plantago major*; *Urtica urens*; *Gentiana nana*; *Oxalis*

acetosella. The "sage brush" is mentioned, but not identified; also a species of *Verbena* and a *Medicago*. He appears to have regretted his inability to procure ripe berries of the cedar, owing to his visit being during the flowering season, as it was his desire to have introduced the tree into the island of Corsica and the southern departments of France which border on the Mediterranean.

The earliest general list of Plants was compiled by Mr. A. W. Lance, naval school-master on board H. M. S. *Illustrious*, in 1845. It contains 127 species, but is unpublished. The MS. presented by Governor Reid is in the Public Library, Hamilton. Grisebach occasionally refers to his herbarium. Dr. Rein, who resided in Bermuda, about 1853, in the capacity of tutor, printed, 1873, a list comprising LVI orders and 128 species, exclusive of Algæ.* In the same year, Mr. J. Matthew Jones published a paper on the vegetation of the Bermudas, in the *Proceedings and Transactions of the Nova Scotia Institute of Natural Science*.

Grisebach notes about 18 West Indian plants as natives of Bermudas in his flora of the British West Indian Islands, 1864, but had evidently very imperfect information before him.

Mr. H. R. Moseley, naturalist and botanical collector of H. M. S. *Challenger*, had the good fortune to visit the islands at a favorable time of year (in parts of April, May, and June, 1873), and collected plants with indefatigable diligence, but, of course, missed those which flower in autumn. Lastly, the writer, with a very slender knowledge of botany, made it an object and pursuit, during a residence of nearly six years, to make himself acquainted with the flora of the island, and found in Sir Joseph Hooker, Dr. Asa Gray, General Munro, Professor Sargent, Professor Oliver, and Professor Thiselton Dyer, friends ever ready to identify any specimen sent to them. From all these sources, aided by a too brief visit from Professor Ernst, of Caracas, in 1876, has the subjoined enumeration been compiled, and it is presented in tolerable confidence that there are not many native plants left unenumerated. There are, doubtless, plants in old gardens which have escaped notice; nothing but a house to house visitation can exhaust the possibilities of fresh discovery in this direction. The Bermudians of the last generation, and long before it, were eminently a sea-faring people, leaving at home their wives, and families, and slaves, and constantly returning with some rarity which had attracted their notice. Thus *Ipomœa tuberosa*,

* REIN, Ueber die Vegetations-Verhältnisse der Bermuda Inseln. <Senckenbergische naturforschende Gesellschaft. Frankfurt, 1872-73.

Brunfelsia Americana, *Phacelia congesta*, *Dolichos Lablab* were all added to the list, as the result of accidental observation in old gardens at St. George's.

Any scientific value the following list may possess, beyond its record of facts of observation, such as localities, times of flowering, &c., is due to the obliging supervision of Sir Joseph Hooker, under whose eye the classes have been rearranged, the references checked, and the nomenclature corrected. The writer is responsible for the distribution of the species as native, naturalized, or introduced, distinguished by the letters A, B, and C, in the index. The Linnæan orders and the etymology of names are given where they appear likely to be of assistance towards the identification of plants. Synonyms are only given where the names appear in Grisebach's flora, or in some accredited list of Bermuda plants.

J. H. LEFROY.

DECEMBER 31, 1879.

BOTANY OF THE BERMUDAS.

I.—RANUNCULACEÆ.

Clematis Flammula, Linn. Sweet Clematis.

Introduced originally from Southern Europe. It grows luxuriantly over a verandah in Reid Street, Hamilton, flowering in autumn.

Clematis Japonica, Thursb., *var Jackmanni*.

Introduced in 1874 and flowered annually about July, but not freely.

Ranunculus muricatus, Linn. Buttercup.

Naturalized from Europe, and general.

Ranunculus parviflorus, Linn.

Common about Hamilton.

Delphinium consolida. Larkspur.

Garden varieties are common.

II.—MAGNOLIACEÆ.

Magnolia grandiflora, Linn. Magnolia.

A tree of large size at Peniston's, introduced from the Southern United States. It flowers in June. *M. glauca* Linn. and *M. purpurea* Curt. were introduced at Mount Langton in 1875, and flowered feebly, but died out. The climate or soil appeared not to suit them.

Liriodendron Tulipifera, Linn. Tulip tree or White Poplar of the Southern United States.

- A healthy tree at Par-la-ville; flowers in June.

III.—ANONACEÆ.

Anona muricata, Linn., (*A. tripetala*, Ait.). Sour sop.

Introduced from the West Indies; met with in many old gardens.

A. squamosa, Linn. Sweet sop; Sugar apple.

Met with at Camden's, near Hamilton, but not common in the island. Native of South America.

A. Cherimolia, Mill. Cherimoya.

A rare fruit in Bermuda, first raised from seed in 1853. Native of South America.

A. reticulata Linn. Custard apple, Sugar apple.

Met with in many old gardens. A native of South America.

None of the *Anonas* are in any abundance, not, however, for want of suitable soil or a suitable climate. They are easily grown. The neglect of the cultivation of fruit is traceable to social causes, and to the want of a sufficiently large market.

IV.—NYMPHEACEÆ.

Nymphaea cœrulea, Savign. and *N. dentata*, Sch. and Thonn.

Roots were procured from England in 1874 and survived two or three years, but made no growth and never flowered. They were tried in ditches with feebly running water and in tanks.

V.—SARRACENIACEÆ.

Sarracenia purpurea, Linn. Pitcher plant.

Was introduced at Mount Langton and flowered, but died off. The climate apparently too hot, although it is found from Florida northward.

VI.—PAPAVERACEÆ.

Argemone Mexicana, Linn. Queen thistle; Prickly poppy.

Very common—a yellow dye is sometimes made from the flowers. From the wide diffusion of this plant it may be native; name from *argema*, a disease of the eye for which the juice is supposed to be medicinal.

Papaver somniferum, Linn. Opium poppy.

Met with as a weed—introduced.

VII.—FUMARIACEÆ.

Fumaria officinalis, Linn. Common Fumitory.

A weed, abundant in cultivated ground.

VIII.—CRUCIFERÆ.

Nasturtium officinale, R. Br. Water-cress.

Abundant in the water channels of Pembroke marsh; grows also well on the wet soil. Plants raised from seed procured from the great market grounds of Hertfordshire in 1874 had no marked advantage over the indigenous species.

Nasturtium Armoracia, Fries. Horse-radish.

Cultivated occasionally in gardens.

For the so-called *Nasturtium* of Gardens, see *Tropæolum*.

Sisymbrium officinale, Scop. Hedge mustard.

A common weed by road-sides—easily recognized by its tall racemes and small yellow flowers. Probably introduced from Great Britain.

Senebiera didyma, Pers. Wart cress; Swine grass.

A coarse weed with prostrate stem, and deeply pinnatifid leaves, common. Introduced from Southern States.

Brassica oleracea, Linn.

Several varieties, as *B. capitata*, hort. (cabbage) and *B. botrytis*, Mill. (cauliflower), are cultivated. The latter has been attempted upon a somewhat large scale for the New York market, but was unsuccessful commercially, for want of more frequent and rapid communication.

Brassica Sinapistrum, Boiss. Charlock.

A weed in cultivated grounds.

Brassica nigra, Koch. Garden mustard. Cultivated.

Lepidium Virginicum, Linn. Pepper grass; Pepperwort.

Common; called by Dr. Rein *L. ruderale*, Linn. Name from *lepis* a scale, in reference to the form of the fruit. Introduced from Virginia.

L. sativum, Linn. Garden cress, gardens.

Capsella Bursa-pastoris Moh. Shepherd's purse.

A weed in gardens. Probably introduced from Great Britain, but of very general diffusion.

Iberis violacea Ait. Candytuft.

Quite naturalized by road-sides, chiefly in St. Georges Island, to which its delicate and abundant flowers are a pleasing ornament.

Oakile maritima, Scop., var. *æqualis* Sea-rocket? L. Her., Scurvy grass.

Very common along the shores, and occasionally cooked for food.

Raphanus sativus, Linn. Radish, cultivated.

Malcolmia maritima, R. Br.

Probably introduced from Europe.

Ciamebe cordata Willd. ?

From Cambridge, Mass., 1874.

Matthiola incana, R. Br. Wild stock.

To be found, but not abundantly, among the rocks along the southern shore, in Warwick Parish. Probably escaped from gardens.

Cheiranthus cheiri, Linn. Wall Flower.

Met with in gardens.

IX.—CAPPARIDACEÆ.

Cleome speciosa, H. B., Candelabra plant.

Native of Mexico, common in West Indies. Introduced and almost a weed, seeding itself abundantly at Mount Langton. Two varieties, purple and white. It grows to a height of 3 feet or more.

C. pungens, Willd. The white variety.

Capparis torulosa, Sw. var. of *C. Jamaicensis*, Jacq., Black willow.

To be found at Par-la-ville, where it may be recognized by its glossy leaves, rusty beneath, branches and inflorescence covered with scales; a shrubby tree about 10 feet high; name from the Arabic *Kabar*. The caper plant, *C. spinosa*, Linn., so abundant at Malta, would probably also thrive in similar situations in Bermuda, but is not known.

Steripoma elliptica, Spreng.

Received from Trinidad 1874, and flowered.

Bull. Nat. Mus. No. 25—4

X.—MORINGEÆ.

Moringa pterygosperma, Gærtn. Horseradish tree.

Easily known by its large and graceful *decomposit-pinnatisect* leaves, and small white flowers. Originally of the Old World, but introduced from Turks Islands; may be seen at Somerville and elsewhere. This tree produces the famous Ben oil, extensively used by watch-makers.

XI.—RESEDACEÆ.

Reseda odorata, Linn.? Mignonette.

Cultivated in gardens.

XII.—CISTACEÆ. Rock rose family.

Cistus laurifolius, Linn.

C. salvifolius, Linn.

C. Monspeliensis, Linn.

Were introduced from Cambridge, Mass., in 1874, and were living in 1877, but did not appear to flourish.

XIII.—VIOLACEÆ.

Viola odorata Linn. Sweet violet.

A large variety is established at Mount Langton, and flowers sparingly; but the violet can scarcely be said to be known in Bermuda.

V. tricolor Linn. Pansy; Heart's-ease.

Grown in gardens.

XIV.—BIXINEÆ.

Bixa Orellana Linn.

Grew readily at Mount Langton, but is not generally met with. Introduced from West Indies.

Flacourtia Ramontchi Herit., W. Governor's Plum.

To be found in a few gardens only. A native of Madagascar and the East Indies.

F. prunifolia H. B.

Introduced at Mount Langton from Botanical Garden, Trinidad, 1872, but it did not appear to thrive, and had not flowered in 1877.

XV.—PITTOSPOREÆ.

Pittosporum coriaceum Ait.

A tree of considerable size at Bishop's lodge; no other specimen known. Probably introduced from Madeira.

P. undulatum, Vent., Laurel.

Native of New South Wales, and probably, therefore, of recent introduction. Its cymes of fragrant, graceful white flowers may be seen at the Rectory, Pagets Parish, and elsewhere in March–April; readily propagated by cuttings.

XVI.—CARYOPHYLLACEÆ.

Arenaria serpyllifolia, Linn. Thyme leaved sandwort.

A small annual weed; common in waste places; probably from Europe.

Stellaria media, Sm. Stickwort. Chickweed.

Common chickweed in gardens.

S. nemorum, Linn.

This species will be found in tangled creeping masses along the crags southwest of the Church cave. From the star-shaped flower.

Cerastium viscosum, Linn. Mouse ear; chickweed.

A weed from Europe.

PORTULACACEÆ.

Portulaca oleracca, Linn. Small-leaved Purslane, Turtle grass.

A very common yellow flowering weed in gardens; sometimes used as a pot herb. Probably native, being generally diffused in the West Indies and Southern States.

Sesuvium Portulacastrum H. B. Sea Purslane.

Found along the sea shore in moist places, and in Hamilton Parish marsh; may be distinguished by the absence of petals, the numerous stamens of deep rose color, and the delicate pink lining to the sepals, which are externally a bright green; otherwise much like Purslane in habit. Flowers in September.

Montia fontana, Linn. Water Chickweed.

Common in ponds and ditches.

XVII.—HYPERICACEÆ.

Ascyrum ~~Crua~~ Andree, Linn. St. Andrews' cross, St. John's wort (*A. hypericoides*, Linn Sw.)

This pretty plant is abundant in Pembroke marsh, and not uncommon on hillsides in moist places, easily known by its delicate foliage, cross-shaped yellow flowers, and perforated leaves.

XVIII.—GUTTIFERÆ.

Mammea Americana, Linn. Mammea.

The Mammee fruit is ripe in September, but the trees are confined to a few old gardens—*e. g.*, at Cavendish, Devonshire Parish; originally from the West Indies. (*Lucuma Mammosa* in Reid's list.)

Calophyllum Calaba Jacq., Galba.

From the West Indies; a slow growing, useless tree, somewhat ornamental for its glossy leaves, and therefore planted in fences; flowers in August–September.

XIX.—TERNSTROMIACEÆ.

Camellia Japonica, Linn.

The camellia is scarcely known in Bermuda. Plants imported from Halifax nurseries have, however, flowered. The heat appears too great.

XX.—MALVACEÆ.

Sida carpinifolia, Linn. Wire weed.

Probably native or from the Canaries; very early mentioned in Laws, 1669; still a very abundant and troublesome weed.

Pavonia spinifex, Cav., Burr bush.

Found only in Southampton Parish, and not very common. Easily known by its curiously spiked fruit, or seed vessel; shrub 4 or 5 feet high, probably naturalized from the West Indies at no remote period, after Don José Padon.

Kosteletzkya Virginica, Pres. Mallow.

The very pretty rose-colored flowers of this plant appear in October, but are confined to the upper end of Pembroke marshes.

Abutilon striatum, Dicks. Mallow.

Common in gardens; introduced from Baltimore about 1852.

A. pulchellum. Sweet or White Abutilon.

In gardens, not common.

Hibiscus tiliaceus, Linn. Mahoe.

Known to have been raised about fifty years ago from seed washed on shore; one large handsome tree at Somerville, in Smith's Parish; smaller ones elsewhere; quite naturalized.

H. Rosa-Sinensis, Linn.

Common in gardens.

H. grandiflorus, Michx.

Introduced from Trinidad 1874. already well diffused; its splendid crimson flowers, produced in great abundance; are frequently 6 inches across. The seed could never be found ripe.

H. mutabilis, Linn., Changeable rose.

Common; flowers in October.

H. Cooperi, hort.

Ornamental variety with rose-colored margins round the leaves; introduced 1874, and found to grow readily at Mount Langton.

H. Bancroftianus, Macf.

Variety with thick fleshy, glossy, crenate leaves, which flowers rarely. At the public buildings and elsewhere.

H. populneus, Linn.

In the Cove at Clarence Hill, and elsewhere.

H. esculentus, Linn. Okra.

Is cultivated in gardens, and by some persons relished as a vegetable, of whom the writer is not one. *Abelmoschus esculentus* W. A.

Gossypium herbaceum, Linn. Cotton plant.

Originally from the East Indies. Cotton of this species was both grown and spun in Bermuda, in the last century, as it still is in India and Southern Europe. Old plants are to be met with, nearly small trees. The down is not now put to any economic use, and is superseded, for economic purposes, in the United States, by *G. album*, Wight., and *G. nigrum*, Hamilt.

Thespesia populnea Correa.

In a garden at St. Georges, where it is known as Gamboge tree by some original misapplication of the name.

Althæa rosea, Cav. Hollyhock.

Met with in gardens occasionally, of poor varieties.

Bombax ceiba, Linn. *id.* Silk cotton tree.

There are several of these trees at Mount Langton, planted by Gov-

ernor Reid; flower has not been observed on any. Young trees are met with elsewhere. (*Eriodendron anfractuosum*, DC.) native of West Indies; introduced by Sir W. Reid, about 1845.

XXI.—STERCULIACEÆ.

Sterculia Carthaginensis, Cav.

To be found in the old garden at Spanish Point (Mr. Shaw Wood's), where are several other rare trees, native of Continental America. It may be recognized by its unusually large palmate leaves.

Waltheria Americana, Linn.

Native, found in Pembroke marsh and on the hillside. From A. F. Walther, a botanist of Leipsic.

Guazuma tomentosa, H. B. Bastard Cedar of West Indies.

There is a healthy tree in the officer's garden, St. Georges.

XXII.—TILIACEÆ.

Triumfetta althæoides, Lam.

T. semitriloba, Linn., Burr or Boor bush.

A very common plant in the Walsingham tract; native, becomes a largish bush.

T. Lappula, Linn.

After Triumfetti, a botanist.

XXIII.—LINACEÆ.

Linum usitatissimum, Linn. Wild flag.

Plants are to be found naturalized in Pembroke marsh. It is mentioned as early as 1632, but does not appear to have ever been much cultivated. Probably from a Celtic word Llin, signifying thread, running through many languages.

XXIV.—GERANIACEÆ.

Oxalis cornua, Thunb. Sorrel.

O. microphylla, Poir.

With small, yellow flowers.

O. corniculata, Linn., var. *stricta*, Sav. Yellow wood-sorrel.

With largish, yellow flowers.

O. violacea, Linn. Purple wood-sorrel.

Also American.

XXV.—MALPIGHIACEÆ.

Malpighia setosa Speng. French cherry?

Prof. Oliver remarks: "This may be what Grisebach calls *M. puniceifolia*, Linn. A large, bushy tree, by the officer's library, north of the Hospital Prospect, and at Mr. Zuills, Smith's parish. Introduced in the last century. It flowers in June.

XXVI.—ZYGOPHYLLÆ.

Guaiacum officinale, Linn. Lignum vitæ.

To be found in gardens. From Guaiac, the native name in Guiana.

Melianthus major, Linn. Honey Flower.

Luxuriant in the garden at Mount Langton. Originally from the Cape of Good Hope.

Pelargonium sp. Double geranium.

The climate and soil of Bermuda seem to suit the double varieties of *Pelargonium* remarkably well; these beautiful flowers are therefore very abundant, and of many shades, but chiefly scarlets. Of cultivated hybrids which are continually varying, the number and variety is considerable; but it is rare to see a geranium which would attract notice at the humblest flower show in England or America. This is more the consequence of want of skill in cultivation than the fault of the climate, but the plants straggle and run to wood in a vexatious way.

Pelargonium ———. Stork's bill; Sweet-scented geranium.

Is completely naturalized, but not to be found far from the neighborhood of houses and gardens. Its bright pink flowers and sweet-scented leaves are among the pleasures of the islands.

Geranium dissectum, Linn. Wild Crane's bill.

Quite naturalized on David's Island, originally British.

G. pusillum, Linn.

A smaller wild geranium. Also British.

Impatiens balsamina, Linn. Balsams; Snapweed.

An annual, cultivated in gardens, originally from the East Indies.

XXIX.—RUTACEÆ.

Quassia amara, Linn. Quassia.

Introduced at Mount Langton from the West Indies in 1874, and grew well, but had not flowered in 1877.

The name immortalizes Quassi, a negro slave of Surinam, who made known the medicinal properties of one of the species.

Ailanthus glandulosa, Desf.

Originally from China. Introduced by Governor Elliott. The finest trees are at the public buildings, Hamilton.

Xanthoxylum Olava-Herculis, Linn.

A single tree of about 10 inches diameter on a hill east of Paynter's vale. Easily known by the large pellucid points in the leaflets and their strongly aromatic taste. Although this tree was the object of numberless visits at all seasons, the writer could never find fruit or flower; nevertheless there are a few seedlings to be found among the *Sage* and *Sponia* bushes around.

According to one tradition this tree, now 30½ inches in girth, was planted about a century ago by a Mr. Paynter, and has not increased in size within memory; it does not, however look an old tree. The writer inclines to believe that it is a last survivor of the native "yellow wood" frequently mentioned in the first accounts of the island.* Every endeavor to transplant young plants failed, owing to the impossibility of extricating their long tap root unbroken from the crevices of the rocks.

Citrus Limonum, Risso.

The common wild lemon, berry ovoid, tubercled or rugulose; very acid; leaf-stalks with scarcely any trace of a winged margin. (*C. spinosissima*, Rein.)

Var. called Pumpnosed lemon.

Var. with smooth skin of small size, 1¼ to 1½ inches in diameter and nearly globular. *C. limetta*, Risso.

Var. with smooth skin, of larger size, ovoid, called the Lisbon lemon.

*"The timber of the country consisteth of three sorts; the one is the cedar; very fine timber to worke upon, of color redde, and verie sweete; the other sorts wee have no name for, for there is none in the company hath seen the like in other countries before wee came: some did thinke it to be *lignum vitæ* but it is not soe, it is a verie fine wood, of colour yellow, and it bears a leaf like unto a walnut tree, and the rine or barke is is much like a walnut tree, and the barke if one taste of it will bite one's tongue as if it were Ginney Pepper. That wood also is very sweet."

This description applies closely to *Xanthoxylum*. Professor Oliver, writing from Kew in October, 1872, having only leaves before him, remarked: "The leaves, strongly translucently dotted, without flowers, must belong to a species of *Xanthoxylum*, and agree fairly with a flowerless Dominica specimen, which has been queried as *X. aromaticum* but the species must remain doubtful until we have flower and fruit, which we shall be particularly obliged for." The visitor, therefore, who shall be so fortunate as to find the tree in flower, will help to solve a problem of unusual botanical interest.

Citrus Bigaradia, Loist. Bitter orange.

Berry large, orange-colored, smooth, bitter, and acid; a beautiful fruit in appearance; the flower is also very large and highly perfumed; leaves large, dark, and glossy. A handsome tree.

Citrus vulgaris, Risso. Seville orange.

Citrus Aurantium, Linn. Sweet orange.

Occasionally weighs over 1 pound, and is of excellent flavor. The best were in 1876 grown at Spanish Point.

Citrus nobilis, Lour. Mandarin orange.

Mandarine oranges of large size, and the finest quality, were produced by one tree at Mount Langton, but the fruit is not much met with.

Citrus nobilis, Lour. *var. minor*. Tangerine oranges.

Also rare in the Islands.

Citrus decumanus, Linn. Shaddock.

Grown at Somerville and elsewhere.

Citrus racemosus, Ris et Poit. Grape fruit.

So called from being produced in bunches. The trees may be distinguished by the very large, heart-shaped wings on the leaf-stalks.

Citrus buxifolia, Poir. (*C. Paradisi*, Macf.) Forbidden fruit.

A variety of the Shaddock, and rarely met with.

Citrus Medica, Linn. Citron.

Rarely met with.

Glycosmis pentaphylla *var. citrifolia*, Lindl.

In some gardens.

Oranges, formerly very abundant in Bermuda, and of excellent quality, have of late years comparatively died out. The quantity grown is nothing like equal to the local demand, and such extravagant prices as 3 shillings or even 4 shillings a dozen are sometimes asked for fine ones. This unfortunate result is due to a disease to which the trees are subject, to general horticultural neglect, and to the preoccupation of the good soil by more remunerative crops. The trees suffer extremely from a white coccus, with knobs or prominences on the exterior shell, which

sometimes covers the entire surface of the shoots and large portions of the leaves. The writer often had them brushed off small trees; and the twigs and leaves well syringed, to their great advantage, but a few weeks brought them back, and no systematic attempt is made to keep down this plague, which is equally injurious to several other trees; for example, the *Eugenia*, the *Avocada Pear*—even the *Cycas* and the *Yucca*. The creature, in fact, seems capable of deriving nourishment from the leaves or tender bark of nearly every description of plant. The insect form is entirely obliterated in the old females, which become mere shells full of eggs. The writer once found a negro engaged in laying bare the roots of some orange trees on Trunk Island, and learned that his object was to apply in some way whale oil to them. In general, however, the trees are suffered to run wild, little care is taken to prune them, or to cut out dead wood, or to free branches which intersect, excoriate, and choke each other, and few young trees are planted. On all these accounts Bermuda can never rival Florida, where the orange is now grown on the largest scale of farming, with all the resources of horticultural skill; but the fruit might be much more abundant than it is for the benefit of the inhabitants.

The Bermuda Company sent out orange, lemon, and citron seeds in 1616.* In 1621 the governor was able to refresh a shipwrecked party with the fruit,† and from 1634 we find examples of rents paid in oranges and lemons.‡ Sir W. Reid, among his many beneficial measures, procured great quantities of young plants for distribution from Madeira about 1846, and bore strong testimony to the excellent quality of the fruit of the island growth.

Triphasia trifoliata, DC.

To be found as a low creeping bush in some gardens. Introduced.

Murraya exotica, Linn. Martinique Laurel.

A very ornamental shrub, not uncommon in gardens. Introduced from West Indies.

Cookia punctata, Retz. Wampee.

In a few gardens. Introduced by Governor Elliot.

XXXI.—MELIACEÆ.

Melia Azedarach, Linn. Pride of India; in the United States, Pride of China.

A short-lived tree, worthless as timber, but valuable for shade and

* I., p. 117.

† I., p. 158.

‡ I., p. 405.

for the beauty of its flowers. Introduced from Charleston, South Carolina, about 1782. The *Melia* loses its leaves for a few weeks in winter. Flower begins to appear in February. It has astonishing powers of vitality in transplantation, and is popularly supposed to afford a cooler shade than any other tree. Originally from Asia Minor.

Sicietenia mahagoni, Linn. Mahogany.

There is one conspicuous and well-known tree at the Flatts; but a few young trees are met with. Introduced from the West Indies.

Ohloroxylon Swietenia, Linn. Satinwood.

Some young trees introduced from the West Indies at Mount Langton.

XXXII.—ILICINEÆ.

Ilex Cassine, Walt. Holly; Box; South Sea Tea.

This plant is now pretty common, especially near the Flatts, and in Smith and Hamilton Parishes, where it was introduced from Virginia by a Mr. Peniston in the last century. The bright red berries are much sought after for Christmas decorations. (*I. vomitoria*, Ait.)

I. aquifolium Marsh. English Holly.

Was to be found in the garden of Mr. Ayland, St. George's, apparently flourishing. *Ilex* is a word of disputed etymology.

XXXIII.—CELASTRACEÆ.

Elæodendron xylocarpum, DC. Olive wood Bark (*E. orientale* in Lane's list.)

A very interesting native tree, repeatedly alluded to in old laws, where, however, it is confused with *Conocarpus*, *q. v.* The astringent properties of the bark marked it out for the purposes of the tanner, and it was necessary as early as 1650 to restrain persons from unlawfully cutting it. It is now found only in the Walsingham tract, and but little of it left there. Flowers in March and April. Name from *elaia*, an olive, *dendron*, a tree, Gr.; to which, however it has very little resemblance.

Myginda Rhacoma, Sw.

A native shrub, bearing a small eatable berry, found only in Southampton Parish, of West Indian origin, but found also in Florida. The fruit is ripe in January; probably, therefore, flowers in the autumn. Name from Mygind, a botanist.

Euonymus Japonica, Linn.

A shrub found in gardens pretty commonly.

XXXIV.—RHAMNEÆ.

Colubrina Asiatica, Brongn.

Found growing on St. David's Island by Dr. Greenwood, R. A.

Phyllica odorata, Cass.

Identified in 1873; no note of its place of growth.

XXXV.—AMPELIDEÆ.

Vitis vinifera, Linn. Grape-vine.

"Vynes and vyne cuttings" were furnished to the first settlers in Bermuda in 1616. Probably white grapes from Spain; at least such are the oldest vines extant, and from the general resemblance which the climate of Bermuda bears to that of Madeira, which is especially close from November to May, the founders of the colony doubtless anticipated a similar success in their cultivation; in this, as in so many other expectations, they were disappointed. Very fine grapes have been grown in Bermuda, but not in great abundance, and the climate is too near that of the West Indies, where the vine does *not* succeed, to be considered favorable to it. The soil is also generally too poor.

The vine loses its leaves in November, and begins to recover them in February. The interval of rest has not been observed with much accuracy, but does not appear to exceed 120 days. It is given by DeCandolle as 157 days at Medeira.*

The writer imported and distributed a great number of the best English hot-house varieties, especially Black Hamburgs and Muscats of various denominations, and they bore in Mount Langton Garden, when only 3 years old, fruit which as to flavor left nothing to be wished; the best bearing vine, however, was one transplanted out of an old garden where it grew in a marsh. It was layered in marshy ground, where the water habitually stood, in a ditch close alongside the trellis, at 6 to 12 inches only below the level of the soil, having a mean temperature of about 21° C. (70° Fahr.). Under these singular circumstances it produced very fine and highly-flavored fruit, akin to Black Hambro', but redder in color. The bunches, however, rarely reached 1 pound, but single berries were often an inch in diameter.

These vines were skillfully pruned, the bunches thinned, and the berries also thinned, by an English gardener. In general, vines in Bermuda are left entirely to nature. It is customary to let them run over a horizontal trellis for shade, but they are scarcely ever touched with

* Géographie Botanique, 1855, I. p. 47.

the knife, and never manured—a neglect which fully accounts for the poor quality of the fruit.

An interesting example of the diffusion of plants was afforded by the foundering of the ship Minnie Breslauer, on January 6, 1873, on the south shore. She had a cargo of white Lisbon grapes, many of which were washed on shore and germinated at high-water mark. Numbers of plants were, from curiosity, taken up and transplanted, some of which bore fruit in 1876.

The vine flowers in February; bears in July.

The following comparison of the approximate mean temperature of the vine-growing region of Madeira (below 2,000 feet) with that of Bermuda (below 200 feet) makes the essential difference of the two climates very apparent.

Month.	Madeira.	Bermuda.	Month.	Madeira.	Bermuda.
January	61. 9†	63. 3‡	July	64. 4* to 70. 1†	86. 3‡
February	62. 7†	63. 0‡	August	65. 5* to 71. 0†	81. 7‡
March	64. 0†	63. 3‡	September	65. 8* to 70. 9†	79. 8‡
April	58. 3* to 67. 1†	66. 5‡	October	63. 0* to 68. 7†	73. 7‡
May	58. 7* to 68. 4†	70. 4‡	November	59. 5* to 65. 0†	68. 6‡
June	60. 2* to 68. 2†	76. 0‡	December	62. 0†	64. 8‡

* DeCandolle, Géogr. botanique, I, p. 387. These are the approximate temperatures at the upper limit of 676m, or 2,000 feet.

† Temperatures toward the sea-level or at the lower limit, from Dr. M. C. Grabham, on the Climate and Resources of Madeira, 1870.

‡ By interpolation.

Ampelopsis quinquefolia, Michx. Virginian creeper; Sarsaparilla.

This plant is to be found wild about the caves of Walsingham.

Ampelopsis tridentata, Thun.

Introduced in 1875 and doing well at Mount Langton.

Cissus discolor, Blum.

This beautiful creeper flourishes with great luxuriance at Mount Langton, under glass, losing its leaves regularly in the winter. A specimen was also found in a garden at Saint George's, unprotected, but it barely lived through the winters.

XXXVI.—SAPINDACEÆ.

Cardiospermum Halicacabum, Linn. Small shot.

This pretty little creeper is common in the Walsingham tract, and rarely met with elsewhere; native. Common to Africa and America.

Oupania fulva, Mart.

A single tree is to be found at Spanish Point, where it flowers very freely in July; native of the West Indies. Introduced.

Blighia sapida, Kœn.

A tree of the West Indies; originally from West Africa. In the garden at Par-la-ville; flowers in July. Fruit ripe in November.

Sapindus Saponaria, Linn. Soapberry.

In a few gardens; flowers in November.

S. longifolius, Vahl.

At Mount Langton; a small tree which had not flowered down to 1876.

Dodonœa viscosa, Linn. Broom; Dogwood.

Pretty generally diffused; abundant at the east end of Harrington Sound; may be known by its highly colored, winged seed-vessels; flowers in March. Identified by Grisebach and Dr. Rein as *D. angustifolia*, Lam. Possibly both specimens are found; named after Dodocus, a botanist.

Nephelium Litchi, Lour. Lee-chee or Litchi.

Introduced by Governor Elliott about 1853.

A tree at Mount Langton bore abundantly in 1871; flowers about February. Fruit in August. (*Dimocarpus Litchi*, Lour.)

Koelreuteria paniculata.

A native of China. Introduced. The locality in which it was found has not been noted.

Pavia, sp.

A tree in the grounds of Mrs. Ewing, Hamilton, digitate leaves, which has never flowered; appears to be *Pavia humilis* of the Horse-chestnut family.

XXXVII.—TEREBINTHACEÆ.

Rhus Toxicodendron, Linn. Poison ivy.

Native, and among the plants mentioned by the earliest travelers (1623). Common in good soil, and viewed with much dread by the inhabitants. Different constitutions are susceptible in very different degrees to the poisonous emanations of this plant; many persons can handle it and smell the flowers, which are very fragrant, with impunity; others have painful blisters produced on the face and hands by going near it, and, as is sometimes asserted, without being conscious of its presence.

Rhus excisa, Thunb.

Introduced from Cambridge, Mass., 1875.

Rhus juglandifolia, Willd. Walnut-leaved Rhus.

A native of Nepal. Introduced at Mount Langton from the West Indies, 1875, and well established.

Schinus molle, Linn. Spanish pepper.

A native of Peru; raised from seed received from Gibraltar, and well established.

Mangifera Indica, Linn. Mango.

The mango is a fruit in Bermuda. A tree at Mount Langton bears abundantly. Introduced by Governor Elliot. Flowers February to April; fruit, August and September.

XXXVIII.—LEGUMINOSÆ.

Ulex Europæus, Linn. Gorse or furze.

Raised in quantity from seed, about 1874, at Mount Langton, where it established itself and flowered freely for a year or two, but did not make continuous healthy growth. The climate is probably too hot for it so near the sea level. Its first introduction is due to Mr. J. M. Jones.

Medicago lupulina, Linn. Black Medick clover.

A common weed in pastures everywhere. Cattle only eat it when they are forced by hunger. It is mentioned by Michaux in 1808.

M. maculata, Willd.

M. muricata, All. With.

A common running weed, which covers large circular patches of ground, recognized by its prickly, coiled seed-vessels.

M. denticulata, Willd.

Indigofera tinctoria, Linn. Indigo.

Introduced for commercial purposes early in the seventeenth century, and now naturalized. It is mentioned as indico in 1623. There is no evidence that it was ever cultivated to profit.

Spartium junceum. Spanish Broom.

Raised from seed at Mount Langton, and flowered, but never established itself.

Aschynomene, sp.

A species not determined; is to be found at Paynter's Vale. It resembles a small mimosa.

Desmodium virgatum, Desv. (*Hedysarum virgatum*, Hamilt.) An herbaceous plant; to be found along the South Shore road in Devonshire Parish.

D. gyrans, Linn.

Was grown at Mount Langton.

Arachis hypogæa, Linn. Peanut or Earthnut.

Cultivated in a few gardens. Introduced from America.

Cajanus Indicus, Spreng. Pigeon pea.

Not uncommon, and occasionally eaten by the colored natives. Introduced from the West Indies.

Cytisus Laburnum, Linn. Laburnum.

Plants were raised from seed in 1872, but did not thrive.

Melilotus officinalis, Willd. Melilot.

Very common in cultivated grounds; of little value. Cows will eat it, but the patches are left untouched if there is other food.

Melilotus alba, Lam.

M. parviflora, Desf.

Trifolium pratense, Linn. Red clover.

One of a great variety of fodder plants; tried extensively on low ground at Mount Langton, 1875-'76, where it answered better than any other, and might be cultivated to advantage in parts of Pembroke marsh.

T. repens, Linn. White clover.

Similarly tried; did not appear to answer so well as red clover.

Robinia Pseudacacia, Linn. Common acacia; locust.

Introduced from the United States; there are well grown trees at the public buildings, Hamilton. (*R. dubia*, Fonc.)

Hedysarum Onobrychis. Saintfoin.

Said to be occasionally grown; but the writer never met with it. From Malta.

Wistaria frutescens, Poir. Wistaria.

A native of the Southern United States. Introduced at Mount Langton, 1874, where it flowered in April, 1877, but the plants did not make healthy growth; the soil was, perhaps, too light and calcareous.

Hardenbergia digitata, Lindl.

Raised from West Australian seed and established at Mount Langton; it flowers in April and May.

Vicia sativa, Linn. Vitch or tare.

A weed in pastures.

Lathyrus odoratus, Linn. Sweet pea.

Cultivated in gardens.

Pisum sativum, Linn. Common pea.

Cultivated in gardens, but to no great extent. An American variety called the Bird-eye pea, sown in June and July, is grown generally for fodder.

Phaseolus vulgaris, Linn. Kidney bean; French bean.

One of the most valuable products of the vegetable garden, and much grown.

Phaseolus sp.

A species not identified.

Ceratonia tiliqua, Linn. Locust.

This tree is not uncommon, but, no attention having been paid to the subject, nearly all the individuals appear to be male trees, especially in and about Hamilton; the fruit is consequently uncommon. Female trees may be found in Hamilton parish; flowers in June. Probably introduced in the present century.

Clitoria Ternatea, Linn. Blue pea.

Introduced at Mount Langton from the West Indies, 1873, but a native of India; single and double flowering, and naturalized, seeding abundantly.

C. Brasiliana, Arrab. Purple flowering pea.

Introduced at the same time; both plants are naturalized.

Centrosema Virginianum, Benth. Spurred Butterfly pea.

In Dr. Rein's list.

Vigna luteola, Benth.

Introduced from the West Indies, at Mount Langton, and naturalized; seeding abundantly.

Bull. Nat. Mus. No. 25—5

Dolichos Lablab, Linn.

A beautiful variety with purple veins is to be found in some gardens at Saint George's; perhaps *D. purpureus*.

Another at Mount Langton.

Canavalia obtusifolia, DC. Bay bean.

Native, and to be found mixed with *Ipomea pes capræ* along the south shore; flowers in December. It is mentioned as early as 1623.

Psoralea glandulosa, Linn.

Sent from Cambridge in 1874. Doing well in 1877.

Balsamocarpon brevifolium, Choisy.

A packet of seeds of this valuable plant was received from Kew in April, 1875. They germinated, but the young plants were all in succession attacked by some insect and none of them survived.

Adenocarpus telonensis, DC.

Introduced from Cambridge, Mass., 1874, and living 1877.

Argyrolobium androsæmifolium.

The same remark.

Anthyllis Barba-Jovis, Linn.

The same remark.

Tamarindus Indica, Linn. Tamarind.

To judge from the size of the oldest trees, the Tamarind must have been introduced a century ago. One of the finest trees in the Islands is a Tamarind at Point Shares, which is 9 feet 6 inches in girth. One at Brightwood is said to be 14 feet in girth. No use is made of the fruit. This is but one of many examples of the neglect of minor industries by the natives of Bermuda. Preserves are imported, notwithstanding the abundance of native fruits suitable for making them.

Seeds of the great leguminous climber of the West Indies, *Entada scandens*, Benth., are often washed ashore in Bermuda, but the plant is not known to have ever grown.

Cæsalpinia pulcherrima, Sw. Barbadoes' Pride.

Barbadoes flower-fence, at the rectory, Southampton Parish, and elsewhere; naturalized in the West Indies; originally from the East Indies. (*Poinciana pulcherrima*, Linn.) Flowers in August.

Poinciana regia, Boj. Poinciana.

There are many trees about Hamilton. Two or three that were raised from the seed of 1870, in Mount Langton, first flowered in 1878. The leaflets are smaller and much more numerous than in the preceding species. Originally from Madagascar.

Cæsalpinia elata, Sw.

Was raised from seed brought from Turk's Island, in 1872, by Mr. Wingood, and flowered the third year; flowered in June. Originally from India.

Cæsalpinia Gilliesii, Wall.

Introduced from Cambridge, Mass., in 1874. Had not flowered in 1877. Originally from South America.

Colutea arborescens, Linn. Bladder senna.

Raised from seed sent from Kew, 1872, and flowered in Hamilton.

Erythrina velutina, Willd. Locust.

Several old and very large trees exist; the largest, now fallen, is at Mr. R. Tyne's, Devonshire Parish; the largest sound tree at Mr. Somers Tucker's, Smith's Parish. It is 12 feet round 6 feet from the ground, the huge roots allowing no nearer measurement. This tree does not in the least agree with the early description of the "yellow wood." But the wood has a strong tinge of yellow, and is employed on that account for inlaying. There is reason to think that it was formerly known to the inhabitants, as it is still to the soldiers, as the "yellow wood;" for in a map of Ireland Island, in the British Museum, dated 1694, a "yellow tree" is inserted as a landmark near the present site of the captain superintendent's house (N. side of his cove). The original or true yellow wood, however, is never mentioned by Norwood or late writers, as it probably would have been if known to them; and I infer that the yellow tree of 1694 was a "locust." The flowers are orange red, and appear in April. (Add. MSS. 5,415, G. 14.)

Erythrina, sp.

A large specimen at Mount Langton, passing as *Erythrina indica*, Lam. The seeds are, however, scarlet, whereas those of *E. indica* are black. It differs but little from the last, but the flowers are dark scarlet, the leaflets further asunder and more acute, petioles longer. It flowers from February to April, the first flowers preceding the leaves, which are very umbrageous.

Erythrina speciosa, Andr. Sword plant.

The *Bois immortelle* of the French West Indies, called by Dr. Rein *Catalpa corallodendron*, L. Seeds scarlet. The most common species in Bermuda. The wood is yellow, and it might be supposed to have been the "yellow wood" of 1694 but for the fact that it was first introduced by a gentleman still living, Mr. R. R. Darrell, about fifty years ago.

Erythrina cristægalli, Linn.

Only one specimen known, which is in a garden, formerly Mr. Kennedy's, Hamilton.

Erythrina caffra, Thunb.

Caffra-brom was raised from Cape seed, but had not flowered in 1877.

E. Corallodendron and *E. herbacea* were imported, but had not flowered in 1876.

Sophora tomentosa, Linn.

Native, and to be found sparingly along the southern shore and on Smith's Island; common in the tropics. The name is from the Arabic.

S. Chinensis, Todd.

Some plants received from the botanical gardens, Cambridge, Mass., did not thrive.

Myrospermum perniferum, D. C.

Introduced by Governor Reid, about 1846. A fine flowering tree at Mount Langton; others elsewhere.

Guilandina Bonducella, Linn. Nicker tree.

Native, but found only once in the Walsingham tract, in April, 1874, when it was in flower.

Pithecolobium Saman, Benth.

Plants received from Barbadoes grew at Mount Langton. (*Calliandra Saman*, Gr.)

Cassia Fistula, Linn.

A fine tree on War Department property, above naval wells; introduced from the West Indies.

C. bacillaris, Linn.

At Mount Langton; easily recognized by having only 4 leaflets.

C. bicapsularis, Linn. Christmas bush.

A climbing variety common in fences.

C. glauca, Lam. West Indian Ash.

At Somerville and Par-la-ville.

C. ligustrina, Linn.

Common in gardens; distinguishable by the very pointed leading leaflets, like Privet, whence the name.

C. occidentalis, Linn.

An annual weed in some gardens, especially at St. Georges.

C. corymbosa, Lam.

Introduced at Mount Langton from the United States, and flowered, but, being in a poor soil, is not likely to survive long.

The only species of *Cassia* quite naturalized is of a climbing habit, locally called the Christmas bush, having but 6 fertile stamens; here queried as *C. bicapsularis*, Linn.

Brownea grandiceps, Jacq.

Introduced from the West Indies at Mount Langton, 1875, and left thriving in 1877, but had not flowered.

Casparea porrecta, Kth. Napoleon's plume; often called *Bauhinia*.

To be found in gardens; a quick, growing, very ornamental shrub; flowers in May or June.

Bauhinia parviflora, Vahl.

A tree at the Model Farm, Smith's Parish; flowers in June.

Bauhinia Vahlii, Wight.

A beautiful white flowering variety, introduced from the Botanical Gardens, Trinidad, 1874; flowers freely at Mount Langton in June, and ripened seed.

Desmanthus virgatus, Willd. (*Desmodium virgatum*, Desv.)

Native; a shrubby plant to be found along the South road sides, in Devonshire Parish.

Mimosa pudica, Linn. Sensitive plant.

Raised from seed, and naturalized at Mount Langton.

Leucæna glauca, Benth. Wild mimosa.

This pest is by no means so generally distributed in Bermuda as its extraordinary prolific qualities would have secured if its introduction had been at any remote date. It is given without remark by Dr. Rein, and is probably of recent introduction; but as the inhabitants cannot

be aroused to any adequate sense of the duty of extirpating it, there cannot be a doubt of the serious nuisance it must soon become. It is a plant which is capable of deriving nourishment from the poorest soil, and sends its long-tap root to a distance of many feet. It flowers and ripens seed nearly all the year around. Every seed seems to germinate. The writer has pulled out 300 seedlings from a space of one square yard. The ground at length becomes so full of them as to destroy all other vegetation.

Acacia macracantha, Humb. Bonpl.

Self-sprung from some West Indian soil at Mount Langton in 1874. It was suitably transplanted, and became a flourishing young tree, easily recognized by its fine foliage and very minute leaflets.

A. Arabica, Willd. Gum Arabic; Yellow mimosa

A yellow flowering acacia, not uncommon in gardens.

A. cygnorum, Meissn.

Was raised from seed received from West Australia, and flowered for a year or two at Mount Langton, but proved unable to stand the high winds.

A. Lebbek, Willd. Black ebony

Very fine trees are to be seen at Peniston's, Smith's Parish, the largest 66 inches round, but it is not uncommon elsewhere. Flowers in July. It loses its leaves in winter. Originally from the east; probably introduced from the West Indies in the last century. (*Albizzia Lebbek*, Benth.)

Inga vera, Willd.

Tried at Mount Langton, from the West Indies. The plant languished for three or four years, but never made healthy growth.

XXXIX.—ROSACEÆ.

Chrysobalanus peltocarpus, Mey. Pork-fat apple.

In Mrs. Heeds and Mr. H. Birmingham's gardens. Flowers in July. Bore a purple fruit the size of a plum, the taste of which is very well ascribed by its local or West Indian name.

Rhamnus arbutifolia, Lindl.

This Californian shrub was sent from Cambridge, Mass., in 1874, and was doing pretty well in 1877.

Prunus domestica, Linn. Plum.

Trees from Baltimore (Washington and Wilson's purple) were planted at Mount Langton in 1872, but did not bear fruit.

P. Armeniaca, Linn. Apricot.

The same result followed with apricots, and both are apparently unsuited to the climate of Bermuda, but specimens of the latter have been produced by Hon. E. Harvey, in Paget Parish.

P. occidentalis, Sw. West Indian plum.

P. sphærocarpa, Sw.

Specimens from Trinidad planted at Mount Langton in 1872 came to nothing.

Amygdalus Persica, Linn. Peach.

Formerly a very abundant fruit, but of late introduction; the trees are still numerous, but have been for about 20 years so infested by the American fly that the fruit may be considered extinct; a specimen not spoiled by the disease is nearly unknown.

The first peach trees that bore in Bermuda are said to have been raised in St. David's Island by a retired officer, Lieutenant Lang, from Madeira seeds. There had been American trees raised previously, but they bore no fruit—a result which followed the importation of a number of trees from Baltimore by the writer.

A. nectarina. Nectarine.

The same remark as to the apricot above.

A. communis, Linn. Sweet almond.

The same remark again.

A. amara, Hort. Bitter almond.

The same.

These trees were, however, unfortunately planted in bad soil at Mount Langton.

Fragaria Virginiana, Duchesne. Strawberry.

Wild strawberries have been found in Paget Parish, probably escaped from gardens. The fruit is but little grown, and generally from plants procured from Newfoundland, which begin to bear about New Year's day; at Mount Langton once as early as the end of November (1872), and as late as June (1874). The plants require renewal every second year. A much larger variety has been successfully raised at Clarence

Hill, from New York plants. There is nothing to prevent the fruit being abundant.

Rubus idæus, Linn. Raspberry.

It is clearly established that Bermuda is beyond the southern limit of this native American plant. It was perseveringly tried by Governor Lefroy and Hon. Eugenius Harvey, 1872-'76, and fruit actually produced by the latter, but the plants could not be kept alive.

Spiræa prunifolia, Sieb.

S. salicifolia, Linn.

Both species are to be found in gardens.

Geum radiatum?, Michx.

A common yellow-flowering weed in fields.

Rosa Carolina, Linn.

Tried with the like result.

R. lævigata?, Michx. Wild rose.

Naturalized in Pembroke marsh and in the Walsingham tract.

R. lutea, Brot., var. *Puniceæ*. Austrian briar.

Introduced from Cambridge, Mass, 1874, and very healthy 1877.

R. rubiginosa, Linn. Sweet briar.

Is found in gardens.

R. spinosissima, Linn.

R. Damascina, Linn.

The varieties cultivated in gardens are numerous, and embrace most of the common favorites; the flower is abundant, but from want of horticultural skill is rarely seen in high perfection. Many of the best species were from England and America introduced at Mount Langton, 1872-'76. The moss rose (*R. centifolia*, Linn.) does not succeed in Bermuda. White roses are in great profusion; as many as 2,000 blooms have been used in the Easter decoration of Trinity Church alone.

Cratægus pyracantha, Pers. Hawthorn.

At Camden and Mount Langton; but of a great number of species tried to be raised from seed in 1872, none succeeded in establishing themselves.

Pyrus Malus, Linn. Apple.

A few apples are grown in Bermuda, of an indifferent quality, and rather

as a curiosity than for use. A tree in Mr. Jackson's garden, Hamilton, is the most regular bearer; flowers February and March. A number of trees were planted at Mount Langton in 1872 and flowered, but never produced fruit.

Pyrus communis. Pear.

Pears have been produced, especially by Hon. Eugenius Harvey, 1876, but the tree does not succeed. Of 18 trees from Baltimore, planted at Mount Langton, 1872-'76, not one bore fruit or made healthy growth. They were of 7 varieties.

Cydonia vulgaris, Pers. Quince.

Tolerably common, in moist ground, and bears pretty well. The tree degenerates to a straggling bush, and flowers irregularly in April and May.

Eriobotrya Japonica, Lindl. Photinia. Japan medlar.

Introduced from Malta by Sir W. Reid, about 1850, and now very common. It flowers about September; the fruit is ripe in January, and in good soil and sheltered situations is excellent.

XL.—SAXIFRAGEÆ.

Hydrangea hortensis, Sm.

The *Hydrangea* is almost unknown in Bermuda, although so common in Madeira. Imported plants rarely flower well, and soon die off, probably for want of moisture at the roots.

XLI.—PHILADELPHÆÆ.

Deutzia scabra, Thunb.

Grown in gardens.

XLII.—CRASSULACEÆ.

Bryophyllum calycinum, Salisb. Lip plant.

One of the commonest weeds. First introduced into Bermuda as a curiosity by a Captain Stowe, in 1813, but now naturalized everywhere. From *bryo*, I grow; *phyllon*, a leaf; Gr.

Echeveria gibbiflora, DC., var. *metallica*.

Introduced at Mount Langton, 1872, from Kew, and becoming common.

Kalanchoe, sp.

The same note.

Sedum acre, Linn. Stone crop.

Introduced at Mount Langton; this class of garden plants is, however, scarcely known in Bermuda.

XLIII.—RHIZOPHOREÆ.

Rhizophora Mangle, Linn. Mangrove.

Abundant in salt marshes everywhere; flowers in February. From *rhizon*, a root; *fero*, I bear; Gr.

XLIV.—COMBRETACEÆ.

Terminalia Catappa, Linn. Demerara almond.

Some fine trees at Mount Langton; flowers in June; named from the terminal leaves.

Laguncularia racemosa, Gært.

Native along the shore (*Conocarpus racemosus*, Linn.). Common to Southern United States and West Indies.

Conocarpus erectus, Linn. Sea mulberry; often called bark; button-tree; or alder.

Native, and universal along the shores in suitable places. Common to the Southern United States and to the West Indies; flowers in July. From *konos*, a cone; *karpos*, a fruit; Gr.

XLV.—MYRTACEÆ.

Jambosa vulgaris, DC. (*Eugenia Jambos*, Linn.) Rose apple.

To be found in a few gardens only. Flowers about March. Fruit ripe in June.

Eugenia ^{monticola} axillaris, Poir., *ib. loc.* Stopper.

Native. Common in the Walsingham tract, and occasionally met with elsewhere, *e. g.*, at Point Shares. It flowers in September. This plant is peculiarly infested by the white coccus, and rarely has a healthy appearance. It is hard to find flower or berries.

E. uniflora, Linn., *ib. loc.* (*E. Michellii*, Lam.) Surinam cherry.

Naturalized, and common in gardens; both flower and fruit may be found in nearly every month of the year, but flowers chiefly February to May. In good soil the trees bear a very agreeable fruit, but it varies much in quality. Trees newly introduced from Trinidad, of a thorny variety, were much superior to those of local origin.

E. Malaccensis, Linn., *id.* (*Iambosa Malaccensis*, DC.)

At Par-la-ville, bore for the first time in 1878.

Pimenta vulgaris, W. A., *id.* Pimento; allspice.

At Long House, Hamilton.

P. acris, W. A., *id.* Pimento; allspice.

At Mount Langton, and elsewhere.

The species are easily distinguished, the former having 4, the latter 5 lobes to the calyx; flowers in June.

Psidium Guaiava, Rad. (*P. pomiferum*, *P. pyriforme*, Linn.) Guava.

Probably native, as it springs spontaneously, and is to be met with quite wild. It bears capriciously. The fruit is rarely abundant; flowers May, June, on to September. Fruit about December.

P. Cattleianum, Sabin., *loc.* Guava-berry; Governor plum.

In a garden near Paget church.

P. cordatum, Sims., *loc.* Myrtle guava.

At Somerville, in Smith's Parish.

Punica Granatum, Linn. Pomegranate.

Was grown in Bermuda as early as 1621, and probably found there, the introduction of early navigators. It is quite naturalized and often used in fences. Double flowering trees of great beauty are common.

Eucalyptus globulus, Sabil., *id.* Blue gum.

A number of trees were raised from seed in 1873, and one specimen in Pembroke Marsh attained a height of 12 feet, but required support against the winds, which precluded all hope of their being established.

E. resinifera, Smith. Red gum.

A specimen of this species resisted the wind, and appears capable of thriving.

E. coriacea, A. Cum.

A specimen of this species made very poor growth, but continued to live.

XLVI.—LYTHRARIÆ.

Lagerstroemia Indica, Linn. "Queen of the Shrubs." Crape myrtle of the U. S.

This very beautiful shrub was introduced from Caraccas by Capt. J. C. Austen, R. N., and is not uncommon. The largest tree is at Mount

Langton; flowers from May to September. Originally a native of China. There is said to be a white *Lagerstrœmia* on the island, but the writer never saw it.

XLVII.—ONAGRARIÆ.

Oenothera rosea, Ait.

Common on roadsides in Warwick Parish, and near Pembroke church.

O. longiflora, Jacq., *id.*

To be found along the south shores. Both these are West Indian.

O. humifusa, Nutt.

Found near Tucker's Town; a North American specimen.

O. sinuata, Linn.

Found on the shores near Shelly Bay; also North American.

O. biennis, Linn.

Isnardia repens, DC.

In marshes.

Gaura coccinea, Nutt., Ph.

Fuchsia coccinea, Linn. *id.* Fuchsia.

This plant is but little cultivated in Bermuda, and by no means as common as might be expected. The finer modern varieties are unknown.

XLVIII.—PASSIFLOREÆ.

Carica Papaya, Linn. Papaw.

Common, but not cultivated to any great extent, although it grows quickly and in poor soil. The leaves are popularly believed to have extraordinary curative effects, applied externally in rheumatic cases, and also to make meat tender. There are at least two varieties, originally from South America.

Passiflora laurifolia, Linn. Water lemon.

P. maliformis, Linn. Water lemon.

P. quadrangularis, Linn. Grenadilla. Water lemon.

These are met with in gardens, but the fruit is not abundant.

P. ciliata? Ait. Wild Passion flower.

The wild Passion flower, with 3-lobed, subserrate leaves, like *P. edulis*; glands at the top of the stalk; common about Walsingham and Paynter's Vale; flowers in August. The fruits are locally called apricots.

P. cœrulea? Linn.

Wild Passion flower, with 5-lobed leaves, not serrated; the glands more distant from the leaf; appears to flower more rarely. There is said to be another very small wild species, undetermined.

P. edulis? Linn.

A white-flowering species at Mount Langton, introduced from Madeira; bears an oval and quite uneatable berry of very strong taste, nearly as large as an egg.

P. princeps, Todd.

This lovely crimson species flowered with great luxuriance under glass at Mount Langton; introduced from England 1874.

Tacsonia mollissima, H. B., and *T. Van Voexemii*, Funk, were tried unsuccessfully at Mount Langton.

XLIX.—CUCURBITACEÆ.

Sicyos angulatus, Linn. Wild Bryone.

An American species of chance introduction; found about the Church Cave, Paynter's Vale.

Cucumis sativus, Linn. Cucumber.

C. Melo, Linn. Melon.

Cucurbita moschata, Linn., Musk melon, *Citrullus vulgaris* or *Ocucurbita Citrullus*, Linn., Water melon, are cultivated in many varieties and plentiful in the early autumn months; also *Cucurbita Pepo*, Linn., Pumpkin; *C. Melopepo*, Linn., Squash; *C. maxima*, Gourd.

L.—BEGONIACEÆ.

Begonia fuchsioides, Hook.

Common in gardens.

B. hydrocotylifolia, Grah.

B. Rex, Pritz.

B. ulmifolia, Willd.

Are all to be found in gardens pretty commonly.

LI.—CACTEÆ.

Melocactus communis, DC. Turk's cap.

Common in gardens; probably brought from the Turk's Islands in the seventeenth century, when they were much frequented by Bermuda salt-rakers. From *melo*, melon and cactus.

Cereus triangularis, Haw. Night-flowering cereus.

C. grandiflorus, Haw.

Both common in gardens. From *cereus*, a torch.

Opuntia Tuna, Mill. Prickly pear.

Native, being mentioned as early as 1610. To be found everywhere. From *Opus*, a city in Greece, where it abounded.

O. tomentosa, Salm. Tall prickly pear.

One aged specimen at Mount Langton is about 15 feet high, and 30 inches round the stem.

O. vulgaris, Haw.

O. Pes-Corvi, Le Conte.

O. Ficus Indica, Mill.

O. coccinellifera, Mill.

Introduced with a view to the cultivation of the cochineal insect, for which, however, the climate is too wet.

The following species were introduced at Mount Langton from the Botanical Gardens, Cambridge, Mass., in 1875, and promised to establish themselves: *Opuntia dejecta*, Salm.; *O. flavicans*, Lemair; *O. integrifolia*, *O. longifolia*, *O. megacantha*, Salm.; *O. tomentosa*, Salm.

Pereskia aculeata, Mill. *id.* Barbadoes gooseberry.

Tolerably common in gardens, but not so much so as the agreeable acid of the fruit deserves. It bears very abundantly.

P. Bleo, DC.

A red-flowering variety, in some gardens; originally from Mexico.

LII.—FICOIDEÆ.

Mesembrianthemum, Linn.

Of a large number of species for which the writer was indebted to Professor Sargent, of Cambridge, Mass., in 1874, the following were living and thriving in 1877:

M. acinaciformum, DC.

candens, Haw.

depressum, Haw.

edule, Linn.

M. heteropetalum, Haw.

multiflorum, Haw.

uncatum, Salm.

vaginatum, Lam.

The following were living, but appeared too tender for the climate

<i>M. canescens</i> , Mill.	<i>M. rhomboideum</i> , Salm.
<i>emarginatum</i> , Linn.	<i>subincanum</i> , Haw.
<i>muricatum</i> , Haw.	<i>trienifolium</i> , Linn.
<i>violaceum</i> , D. C.	<i>uncinatum</i> , Linn.

There is thus good reason to suppose that this ornamental class of succulent plants at present hardly known in Bermuda might be easily naturalized.

LIII.—UMBELLIFERÆ.

Hydrocotyle umbellata, Linn. Pennywort.

In Devonshire marsh; American and West Indian species.

H. asiatica, Linn. Thick-leaved pennywort.

H. repanda, Pers.

The name is from *hudor*, water; *cotilé*, a vessel, Gr., from the cup-shape of the leaf.

Smyrnum olusatrum, Linn. Alexanders.

Naturalized at St. George's. From *smyrna*, myrrh, Gr.

Pastinaca sativa, Linn. Parsnip.

Cultivated since the seventeenth century.

Daucus Carota, Linn. Carrot.

Cultivated.

Angelica Archangelica, Cham. and Schl. Angelica.

Cultivated.

Coriandrum sativum Linn. Coriandum.

Probably introduced by Portuguese immigrants from Madeira. It is quite naturalized in some fields at Point Shares, and became a weed, which may be known by its offensive smell. From *thoris*, a bug, Gr.

Anthriscus vulgaris. Rough chervil; iron weed.

A common weed. The name is used by Pliny.

Chærophyllum sativum, Lam. Garden chervil.

Found in gardens.

Anethum graveolens, Linn. May-weed.

Naturalized and common, especially on St. George's Island.

Torilis nodosa, Gært. C. C. C. C.

A weed, introduced from Europe.

Pimpinella laterifolia, Link. Burnet saxifrage.

A weed.

Ferula communis, Linn. (*Fœniculum vulgare*, Gærtn.) Fennel.

In gardens; "sweet fennel"; probably the *Fœniculum dulce* of botanists; is mentioned among seeds sent out in 1616.

F. glauca.

An ornamental species. Introduced from Cambridge Botanical Gardens, 1874.

Apium leptophyllum, F. M. Fool's parsley.

Naturalized, and found commonly in waste places.

Apium graveolens, Linn. Celery.

Cultivated at Mount Langton, and of excellent quality. The temperature of the soil at 12 inches' depth ranged from 58° to 70° during the season of its growth.

Petroselinum sativum, Hoffm. Parsley.

Cultivated, and occasionally exported to New York. (*Apium Petroselinum*, Linn.)

LIV.—ARALIACEÆ.

Hedera helix, Linn. Common ivy.

Hardly naturalized, and grown with some difficulty, but not uncommon, and prized for decorative purposes.

Aralia guilfoylia, Hort.

Received from Cambridge, Mass., 1874, and living 1877.

LV.—CORNACEÆ.

Cornus stricta? Lam. Stiff cornel or Dogwood.

A plant received from the United States appeared to thrive in a shrubbery at Mount Langton.

LVI.—CAPRIFOLIACEÆ.

Caprifolium Italicum, R. S. Honeysuckle, cultivated.

C. sempervirens, Michx. Trumpet honeysuckle.

In gardens, but not luxuriant.

Lonicera xylostium, Linn. Fly honeysuckle.

Given by J. M. Jones.

Viburnum Tinus, Linn. Laurestinus.

There is an abundance of this plant at Mount Langton, where it was probably introduced at no distant date, and it grows in very poor soil, but it is scarcely met with elsewhere. There is no tradition as to its introduction. It is in flower in nearly every month.

Sambucus nigra, Linn. Common elder.

A few plants are met with on the islands; for example, on a cross road in Hamilton Parish.

Benthamia fragifera, Lindl.

At Mount Langton, where it did not appear to flourish, and did not flower. Originally from the East Indies.

LVII.—RUBIACEÆ.

Gardenia florida, Linn. Cape jasmine.

In a few gardens.

G. Fortunii.

Introduced at Mount Langton, 1875, and likely to establish itself.

G. nitida, Hook.

The same remark.

Randia aculeata, Linn. Box briar.

An interesting example of local naturalization. This plant, from the West Indies, overspreads the hills in the parish of Warwick and part of Paget, and is unknown in the eastern parishes. Flowers in September. (*R. latifolia* in Lane's list.)

Hoffmannia splendens, Benth., or *Higginsia splendens*, Hort.

Originally from Mexico? Introduced at Mount Langton, from Barbadoes, 1875, and readily established itself where screened from high wind.

Rondeletia odorata, Jacq.

Introduced from the Botanical Gardens, Trinidad, 1872, and established at Mount Langton. Flowers in July.

Chiococca racemosa, Jacq. Snowberry; Blolly.

Native, and common in the Walsingham tracts. Extremely fragrant and ornamental both in flower and fruit; deserves cultivation. It is a native of the West Indies, and flowers October to December.

Ixora coccinea, Linn.

Is frequently met with in gardens.

Bull. Nat. Mus. No. 25—6

I. Javanica, DC. *I. amboyne*, DC. *I. acuminata*, Roxb.

All originally from the East Indies. Were introduced at Mount Langton in 1874.

Coffea Arabica, Linn. Coffee.

Quite naturalized, but confined to shady, moist recesses among the caves at Walsingham. It is not mentioned by any early writers. The berries give a coffee of good quality, but, except for curiosity, no use is made of them, and the quantity is very inconsiderable. Flowers in May and June.

Psychotria undata, Jacq.

Native; a shrub found in the Walsingham tract, where its bright, glossy, dark, wavy, green leaves, tapering at the base, attract attention; flowers (inconspicuous) in April and May.

Morinda Royoc, Linn.

Native; a West Indian plant, found in the Walsingham tract.

Spermacoce tenuior, Linn. Button-weed.

Native; a West Indian plant, found in the Walsingham tract; found also in Florida. From *sperma*, a seed; *aké*, a point, Gr. The seeds have two points.

Borreria laevis, Gr

Native; found also in Florida.

Galium rubrum, Endl.

Larger and less common species than the next; flowered June 15, 1873.

G. uniflorum, Michx. Bedstraw; "Heal-soon."

A very common weed; flowers in June and July.

Vaillantia hispida, Linn.

V. muralis, Linn. (*Rhachicallis rupestris*, DC.)

Native, along the sea-shores.

LVIII.—VALERIANEÆ.

Centranthus macrosiphon, Bots.

A weed from Europe, in Dr. Rein's list. Name from *kontron*, a spur; *anthos*, flower, Gr.

Fedia olitoria, Vahl. Lamb Lettuce.

An annual weed; found on David's Island.

LIX.—COMPOSITÆ.

Ageratum conyzoides, Linn.

A weed.

Ageratum Mexicanum, Sweet.

A weed.

Eupatorium fœniculaceum, Willd. (*Artemisia tenuifolia*, Adans.)

A weed, of American origin.

Eupatorium conyzoides, Vahl.

Kleinia repens, Haw.

Bidens leucanthus, Willd.

A common weed; named from two teeth on the seed.

Cynara cardunculus, Linn. Cardoon. Artichoke.

Cultivated in gardens. The real artichoke, *C. scolymus*, Linn., the writer did not meet with.

Cichorium Intybus, Linn. Succory or chicory.

A weed from Europe, generally diffused, but not put to any use as in Europe.

Taraxacum Dens-leonis, Desf. (*Leontodon*.) Dandelion.

A common weed; named from the cut leaves.

Lactuca sativa, Linn. Lettuce.

Cultivated in gardens.

Sonchus oleraceus, Linn. Sow thistle.

A weed.

S. asper, Vill.

Orepis lyrata, Froel. (*Youngia lyrata*, Cass.)

A small weed.

Eclipta erecta, Linn.

A tall-growing, many-branched weed, with smooth stem and tumid joints, serrate leaves; abundant by water-courses in Pembroke Marsh. (*E. alba*, Hassk.)

Borrichia arborescens, DC. Samphire; Sea ox-eye.

Native; common to the West Indies and Florida. A yellow-flowering,

maritime shrub, with fleshy leaves, some glossy and of a bright green, some hoary and gray. They do not mark different varieties, being often found on the same plant. Flowers in April and May. (*B. frutescens*, in Lane's list.)

Baccharis glomeruliflora heterophylla, H. B. Dogbush.

Native; abundant in Pembroke Marsh, where it flowers a little before Christmas. The ♀ flowers are a few days later than the ♂. (*B. halimifolia* in Lane's list.) A name given by the Greeks to an aromatic plant dedicated to Bacchus.

Solidago virgata, Michx. Golden-rod.

A coarse weed, very common, flowering in autumn. An American species.

S. sempervirens, Linn.

S. Mexicana, H. B.

These species, in the Southern States, affect swamps and salt marshes, but in Bermuda are met with on high ground; for example, on the battery hill, Mount Langton. Name from *solidare*, to unite, Lat., from supposed healing properties.

Erigeron Canadensis, Linn. Fleabane.

Common to the American States and the West Indies.

E. linifolius, Willd. (*Conyza ambigua*, DC.)

E. Philadelphicus, Linn.

E. quercifolius, Lam.

E. bonariensis, Linn. (*Conyza albida*, Willd.)

E., sp. not identified.

Stenactis annecta, Cass. (*Erigeron annuum*, Linn.)

Aster trifolium, Linn.

Artemisia tenuifolia, Willd. Wild wormwood; Cape weed; Godet's weed; French fennel.

A weed in cultivated ground. Brought to Bermuda from Cape Francois, in San Domingo, in packages of gin flasks, about the end of the

last century, by M. Theodore Godet, who resided on Godet's Island, near Salt Kettle. (J. H. D.) Now common.

Senecio vulgaris, Linn. Groundsel.

A weed.

S. mikanooides, Otto. Italian ivy of gardeners.

A climbing species quite naturalized in some gardens.

Dahlia superflua, Ait.

Dahlias of poor quality are occasionally found in gardens. Originally from Mexico.

Zinnia elegans, Jacq.

Cultivated in gardens.

Pyrethrum Parthenium. Common feverfew.

Same remark.

Cineraria maritima, Linn. Sea ragwort.

Cultivated in gardens.

Helianthus tuberosus, Linn. Jerusalem artichoke.

This plant is said to be cultivated in gardens, but is not common; tried in Pembroke Marsh; it grew with great luxuriance, but the tubers were hardly larger than marbles.

H. annuus, Linn. Sun-flower.

Is grown in some gardens.

Centaurea gymnocarpa, Maris and Not.

A weed.

Gazania spendens, H. K.

Cultivated in gardens.

Pluchea odorata, Cass.

Native; found also in Pembroke Marsh, but not very abundant. Grows to a tall bush.

P. purpurascens, DC.

An annual; found in Shelly Bay Swamp and by Warwick Pond. Flowers in June and September. Both are West Indian; the latter is also found in Florida.

Polymnia Uvedalia, Linn.

A coarse yellow-flowering weed; not common; found at Mrs. Ewing's.

Parthenium Hysterophorus, Linn.

A very common annual weed by roadsides.

Ambrosia artemisiæfolia, Linn.

A. heterophylla, Muhl.

Weeds in cultivated ground or by roadsides.

Xanthium echinatum, Murr. Cocklebur.

A weed in cultivated ground; common to every part of the United States.

LX.—GOODENIACEÆ.

Scævola Plumieri, Linn.

Native; common along the south shores; easily known by its white flower, apparently split on one side. Common also in the West Indies and the Southern States.

LXI.—LOBELIACEÆ.

Lobelia cardinalis, Linn.

A garden flower.

LXII.—ERICACEÆ.

Azalea viscosa? Linn., Ph.

Plants imported from Halifax, N. S., flowered very well at Mount Langton for several successive years, but were kept in a conservatory.

Rhododendron sp. Linn.

The same remark applies to the scarlet rhododendron, which, however, did not flower so freely as the azalea.

LXIII.—PLUMBAGINEÆ.

Leptochloa
~~*Statice Caroliniana*~~, Wallt. Sea lavender.

Found by the margin of pools in the Walsingham tract, throwing up tall spikes of small blue flowers in September.

Plumbago Capensis, Thunb. Plumbago.

Not uncommon in gardens. It was introduced from Kew about 1832.

P. coccinea, Boiss., and *P. rosea*, Linn.

Were introduced at Mount Langton, and living, but not established, in 1877.

LXIV.—PRIMULACEÆ.

Anagallis arvensis, Linn. Red pimpernel.

A weed in cultivated ground.

Primula Sinensis, Hochst.

A garden flower.

LXV.—MYRSINÆÆ.

Ardisia acuminata, Willd.

A. humilis, Vahl.

Introduced from the West Indies in 1873 and established at Mount Langton.

LXVI.—SAPOTÆÆ.

Chrysophyllum Cainito, Linn. Star apple.

From the West Indies; in a few gardens.

Sapota Achras, Mill. Sapodilla.

From the West Indies; rather more common than the last; flowers about May; fruit July and August.

LXVII.—EBENACEÆ.

Diospyros Virginiana, Linn. Persimmon.

Introduced at Somerville some years ago and quite established. It grew also readily at Mount Langton, and becomes a nuisance by sending up suckers from the roots.

D. mabola, Roxb.

Was imported from the West Indies, but did not thrive.

LXVIII.—JASMINEÆ.

Jasminum gracile, Andr. Wild jasmine.

A remarkable example of rapid naturalization. This pretty climber was introduced at Paynter's Vale by Archdeacon Spenser, about 1840. It has now completely overrun the Walsingham tract to such a degree as to make the rocks in many places nearly impassable; flowers in June.

J. officinale, Linn., W. Common white climbing jasmine with pinnate leaves.

J. Sambac, Ait., W. White jasmine with cordate leaves.

J. fruticans, Linn. Common yellow jasmine.

All naturalized; the last flowers nearly all the year round:

LXIX.—OLEACEÆ.

Olea Europæa, Linn. Olive.

"We haue oliues grow with us, but no great store." Such is the evidence of nearly the first writer on Bermuda, in 1612. It appears sufficient to prove that the tree was then naturalized, probably from seeds sown by the crews of Spanish vessels visiting the islands or wrecked on them in the sixteenth century. It is mentioned by Smith, 1624, and in 1661 the Bermuda Company ordered them to be planted on every shore; some of those trees are still standing. The fruit is very scanty and not put to any use.

Forestiera porulosa, Poir.

A bushy tree found in the Walsingham tract; there are specimens south of the road leading to the Causeway. It flowers in December, and the fruit may be found in March. Flowers, which are minute, are polygamous, in short, axillary, amentaceous racemes.

Ligustrum vulgare, Linn. Privet.

From an old stock found among the roots of a *Ficus elastica* at Mount Langton. A great number of plants were raised by cuttings and set out in fences as a rival to the oleander, but the plant did not come to any value. Flowers in February.

LXX.—APOCYNÆ.

Allamanda Schottii, Pohl.

Only grown under glass at Mount Langton in 1876, but appears quite suited to bear the open air in sheltered situations.

Thevetia neriifolia, Juss. French trumpet flower. (*Cebera thevetia*, Linn.)

Naturalized, and not uncommon.

Vinca rosea, Linn. Red periwinkle.

Naturalized from West Indies. Common in gardens. *V. rosea*, var. *alba* is met with less frequently.

Plumieria rubra, Linn. Frangipani:

Trees of large size are found in many old gardens, and are very ornamental. They lose their leaves in winter, and flower before the new leaf in May. Originally from tropical America.

Nerium Oleander, Linn.. Oleander; formerly called South Sea rose.

This beautiful plant, which from May to September is the greatest or-

nement of Bermuda, is said to have been introduced from Charleston, S. C., by a Mr. Lightbourn, of Paget Parish, about 1790. In the early years of the present century it was regarded as a rare exotic; now universally used for fencing purposes and as a screen from the sea winds.

Beaumontia grandiflora, Wall.

Sent from Barbadoes by General Munro, in 1874, and flowered freely in a conservatory in 1878.

Stephanotis floribunda, Pet., Thon.

Grows and flowers freely in good soil, but is not often met with. The secret of the best flowering plant at Mount Hill was a *neighboring pig-stye*.

LXXI.—ASCLEPIADEÆ.

Asclepias Curassavica, Linn. Wild ipecacuanha; in West Indies Red head or Blood flower.

Naturalized and common.

A. nivea, Linn.

Appeared spontaneously from some West India soil at Mount Langton and established itself.

Hoya carnosa, Br. Wax plant.

Found in gardens; originally from tropical Asia.

Stapelia maculosa. Carrion flower.

Originally from the Cape; not uncommon as a pot plant.

LXXII.—GENTIANEÆ.

Erythraea Centaurium, Pers.

A native of Britain. In Lane's list as a plant introduced.

LXXIII.—HYDROLEACEÆ.

Nama Jamaicensis, Linn.

Native; an annual weed with white or blue flower; by roadsides, but not common.

Nemophila insignis, Benth. Nemophila.

A garden flower from California; it was not found to do very well at Mount Langton.

LXXIV.—POLEMONIACEÆ.

Cobæa scandens, Cav.

This beautiful climber grew and flowered luxuriantly at Mount Langton, but never matured the seed.

Strobilanthes longicaudatus.

Received from Kew, and flowered well in a sheltered place.

Dipteracanthus affinis, Nees.

This beautiful climber flowered well against a wall. Received from Barbadoes, 1873.

LXXV.—CONVOLVULACEÆ.

Quamoclit coccinea, Mœnch. Cypress vine.

Introduced from America; quite naturalized, although confined to gardens, where it is self-sown in great quantity. Flowers in autumn.

Q. vulgaris, Chois.

Less common and less prolific than the other.

Batatas edulis, Chois. Sweet potato.

Of very early introduction; but it is not always easy to distinguish whether the sweet potato or the common potato is meant in early narratives. It is certainly mentioned in 1653. Sweet potatoes are largely grown.

Ipomœa tuberosa, Linn.

Yellow-flowering *Ipomœa* in the Public Garden of St. George's; removed from Mr. Swainson's, where it grew with great luxuriance, running over several small loquat trees.

I. Nil, Roth. (*Pharbitis Nil*, Chois.)

The common morning glory.

I. Learii, Paxt.

Naturalized in gardens.

I. Pes-Capræ, Sweet. Seaside vine.

Native; common on the sea shores.

I. villosa, R. P.

Found in cultivated ground, probably of chance introduction.

I. Jamaicensis, Don.*I. purpurea*, Lam.

Native; the ornament of the well-known "Convolvulus Cave." (*Convolvulus*, Linn.)

I. dissecta, Pursh. Noyau vine.

Introduced; common. (*Convolvulus*, Linn.)

I. sagittifolia, Pursh. (*Convolvulus sagittifolius*, Michx.)

Naturalized from America, but only found in a small marsh near Shelly Bay, where it is very abundant.

I. sidifolia Schrad.

Naturalized from the West Indies at Clarence Hill, where it runs from tree to tree.

Dichondra repens, Forst.

A common creeping weed among grass.

D. Carolinensis, Michx.

A variety of the same.

LXXVI.—BORAGINÆÆ.

Cordia Sebestana, Linn. Scarlet cordia.

Introduced from the West Indies; in a few gardens.

Tournefortia gnaphalodes, R. Br. Sea lavender.

Native, and common on the south shores; easily recognized by its thick heads of elongated hoary leaflets, and the scars on the branches, where preceding ones have fallen off; flowers white.

T. laurifolia, Vent.

At Mount Langton.

Heliotropium Curassavicum, Linn. Sea turnsole.

Native; found in salt marshes; may be recognized by the twin spikes of small flowers being gracefully curved over in opposite directions. The name is from *helios*, the sun; *trepo*, I turn, Gr.; the flowers being said always to turn to the sun.

Heliotropium Peruvianum, Linn. "Cherry-pie."

This fragrant and favorite plant is by no means common, and would appear not at home in Bermuda. The luxuriant growth seen in Madeira is never met with there.

Borago officinalis, Linn. Borage.

Lithospermum distichum, Orteg. Gromwell.

A seaside plant; native.

LXXVII.—SOLANÆÆ.

Brunfelsia Americana, Linn.

A shrub found in flower in Mr. R. Outerbridge's garden, St. George's, October, 1876. The plant was devoured by white coccus.

Datura suaveolens, Humb., Bonpl. Moon plant.

A common ornament of gardens; both single and double flowering. (*Brugmansia suaveolens*.)

D. Tatula, Linn.

Native; met with as a weed in cultivated ground in Paget Parish; flowers pale violet.

D. Stramonium, Linn. Prickle-bur.

Native and common. It is alluded to in a proclamation of 1679 as "a badd and stinking weede that beares a prickle-burr, the which when it is drie it is full of flatt black seeds, which if suffered to grow, may be very destructive to the inhabitants of these islands, by reason of the venemous and poysonfull nature thereof."

D. Metel, Linn.

D. fastuosa, Linn.

From Mr. J. M. Jones; unknown to me.

Nicotiana Tabacum, Linn. Tobacco.

The principal export of Bermuda in the seventeenth century. The legislature again in 1878 gave encouragement to the cultivation of it. The plant springs up spontaneously among the ruins of old outhouses constantly from seed left perhaps a century or two before. The current value was 2s. 6d. a lb. in 1620, which had fallen to 3d. in 1690, when it ceased to pass as currency. There is reason to believe that the Bermuda tobacco was never of good quality, and that nothing but disappointment can attend its re-introduction.

N. glauca, Graham.

A native of South America; pretty common in gardens. Easily recognized by its yellowish tubular flower, resembling that of the tobacco plant, and blue green leaves.

Physalis edulis, Linn. Cape gooseberry.

Introduced from Cape Seed, 1874. It bears fruit abundantly and nearly all the year round, and will probably soon be found in every garden. (*P. Peruviana*, Linn.)

Physalis angulata, Linn. Cow cherry; Balloon berry.

Naturalized from United States; annual; a weed in cultivated ground.

P. pubescens, Linn. Horse cherry.

Naturalized annual, distinguishable from the above by the more oval form and bluish tint of the fruit; flowers in clusters. (*Physalis hirsuta*, Dun.)

P. lanceolata, Michx. In Lane's list.

Naturalized perennial.

Capsicum annuum, Linn. Guinea pepper; Ohillies.

C. frutescens, Linn. Spanish pepper.

Both commonly grown in gardens.

S. torvum, Sw., *id.*

A weed.

S. aculeatissimum, Jacq. Cockroach berry.

Encouraged in waste places, notwithstanding its reputed very poisonous qualities, for its beautiful scarlet fruit.

S. nigrum, Linn. Nightshade.

A weed.

S. nodiflorum, Jacq.

S. tuberosum, Linn. Irish potato.

"Certain potato roots sent from England" are mentioned in the year 1613; "abundance of white, red, and yellow colored potatoes" are mentioned by Smith in 1623. There seems no doubt, therefore, that this plant, introduced into England from Peru in 1597, found its way to the Somers Islands at a very early date, although it is not always easy to distinguish it in the narratives from *Batatas edulis*, the Spanish or sweet potato. It is now a principal article of commerce. The exports in 1876 reached 2,260 tons (33,099 barrels).

S. ovigerum, Dun. Egg-plant.

Cultivated in gardens.

S. Lycopersicum, Linn. *Lycopersicum esculentum*, Mill., *id.* Tomato.

This plant has become a staple of cultivation in Bermuda since the emancipation of the slaves. The exports reached 672 tons in 1871, but fluctuate much with the seasons.

Lycium vulgare, Dun.

Found on David's Island; originally from Europe.

Petunia acuminata, Graham. White petunia.

Varieties single and double are cultivated. *P. acuminata*, Graham (white), and *P. phænicea*, Juss. (violet), are common.

Nicandra physaloides, Gærtn.

A blue-flowering plant found by Lane near the commissioner's house, Ireland Island. Native of Peru.

Cestrum Parqui, Linn.

Introduced from Cambridge, Mass., 1874, and quite established at Mount Langton, where it flowered profusely.

LXXVIII.—SCROPHULARINEÆ.

Maurandia Barclayana, Bot., Reg.

M. semperflorens, Jacq.

Naturalized, and found clothing a great extent of moist walls at Mount Langton.

Lophospermum erubescens, Don.

An ornamental creeper, common in gardens; a native of Mexico.

Veronica agrestis, Linn. Speedwell.

V. arvensis, Linn.

V. peregrina, Linn.

Weeds; probably of American origin, but also European.

Buddleia Neemda, Roxl. Snuff plant.

Naturalized, and forming hedges in some places. From a proper name.

Capraria biflora, Linn. Tea.

This plant is found near the military police station and along the road to Prospect. Probably of late introduction from the West Indies.

Herpestis Monniera, HBK.

Found in wet ground about the race-course near Shelly Bay.

Linaria Elatine, Desf. Toad-flax.

L. vulgaris, Mill.

Russelia juncea, Zuccar. Heath.

An exotic from Mexico; quite naturalized and common in gardens.

Verbascum Thapsus, Linn. Mullein. Dock leaves.

A conspicuous weed, naturalized from Britain. The woolly leaves are used in Bermuda for cleaning purposes. It is mentioned by A. Michaux, 1803.

LXXIX.—GESNERIACEÆ.

Achimenes sp. ?

In gardens.

Gloxinia sp. ?

In gardens.

LXXX.—BIGNONIACEÆ.

Crescentia Cujete, Linn. Calabash tree.

Of early introduction; few young trees are to be found, but old ones are pretty numerous. The shells of the fruit are used for vessels. At Walsingham is the celebrated "calabash tree" referred to in one of Thomas Moore's poems.

Tecoma pentaphylla, DC. White cedar.

There are two varieties, one with entire leaves, the other with 3.5 leaflets on the same stalk, the flowers being undistinguishable, being exceedingly ornamental; the tree is often met with.

T. Stans, Juss. Trumpet flower.

A standard tree, with leaves impari-pinnate; leaflets 5-7, bearing abundant bright yellow flowers with narrow purple stripes.

T. radicans, Juss. Red trumpet flower.

Climbing red tecoma; common on houses.

T. Capensis ? G. Don.

Orange-flowering climber at Mount Langton.

Bignonia capreolata, Linn.

Introduced at Mount Langton from Cambridge, Mass., 1874.

LXXXI.—ACANTHACEÆ.

Graptophyllum versicolor, Hort. Caricature plant.

Common in gardens.

Justicia alba, Roxb. Large white justicia.

At Bishop's Lodge and elsewhere.

Justicia lucida, Andr.

Common in gardens; almost a weed.

J. Ecbolium? Linn. Blue justicia.

In gardens; not common.

Cyrtanthera rosea, id. Hort.

In gardens at St. George's and at Mount. Langton, where it was brought from Ireland in 1874.

Eranthemum Andersonii, Andr.

E. pulchellum.

From Trinidad, 1875; they were planted out, and appeared to bear the open air.

Thunbergia, sp. White thunbergia.

White and yellow; common in gardens.

Fittonia aryncara, Coem.

Imported 1874. The heat and moisture of Bermuda appeared very suitable to this plant, but it was only grown in a conservatory.

LXXXII.—VERBENACEÆ.

Verbena multifida, R. P. White verbena.

Other ordinary garden species are cultivated. The white is the most common.

Stachytarpheta Jamaicensis, Vahl. Vervain.

Native or naturalized; a common weed, and reputed to possess great medicinal properties, especially in the treatment of yellow fever, now very rarely known in Bermuda.

Phryma leptostachya, Linn.

A weed of American origin.

Lippia nodiflora, Rich.

L. micromera, Schauer.

L. reptans, HBK. Godet's weed.

Aloysia citriodora, Orteg. Sweet verbena.

The sweet verbena is found difficult to propagate, and is by no means common in Bermuda, although plants of considerable size are met with.

Lantana Camara, Linn. Red sage.

Naturalized and abundant. It was introduced from Madeira about 1819, and formerly called Madeira sage = *L. aculeata*, Linn.

L. crocea, Jacq. Prickly sage.

Less common; flowers more yellow. It was brought from Madeira in 1818.

L. odorata, Linn. Common sage.

Introduced from the Bahamas by Colonel Spoffoth toward the end of the last century, with the idea that it would be good for firing, which it is not. It is now the pest of Bermuda, overrunning woods and pastures, and permitted by the supineness of the inhabitants to render thousands of acres of land valueless.

Oitharexylon quadrangulare, Linn. Fiddlewood.

Naturalized and common, although said to have been first introduced by Archdeacon Spenser at Paynter's Vale, about the year 1830.

Duranta Plumieri, Linn. Pigeon berry.

Naturalized and common. The native species is unarmed. Some plants imported from Maderia in 1873 proved to be spiny, and the flowers somewhat larger and of a deeper blue than the common species.

Callicarpa ferruginea? Sw. Turkey berry.

One of the most ornamental of native plants, from its large masses of magenta-colored fruit. Found chiefly in the Walsingham tract; flowers in June.

Volkameria aculeata, Linn. Prickly myrtle. (*Clerodendron aculeatum*, Gr.)

Naturalized at Spanish Point and on Ireland Island, but not very often met with.

Clerodendron capitatum.

Wild around Pembroke workhouse, formerly the rectory; probably introduced.

Avicennia nitida, Linn. Black mangrove.

Native; usually accompanies the mangrove proper; there is a grove of trees on comparatively dry soil at Shelly Bay. The popular name, black mangrove, is derived from the color of the wood. (*A. tomentosa*, Linn., in Lane's list.)

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LXXXIII.—LABIATÆ.

Ocimum Basilicum, Linn. Basil.

Introduced in 1616, and still cultivated.

Coleus, sp.

Common in gardens. The name comes from *kolous*, a sheath, Gr., from the union of the stamens.

Mentha viridis, Linn. Garden mint.

M. rotundifolia, Linn. Wild mint.

By roadsides.

M. arvensis, Linn. Marsh mint.

Common in Pembroke marsh.

Pycnanthemum muticum, Pers. Horse mint.

Calamintha Nepeta, Linn.

Melissa officinalis, Linn. Common balm.

M. Calamintha, Linn.

Nepeta Cataria, W. Catmint or Catnip.

Common in Pembroke marsh.

Salvia serotina Linn. *Monogynia*.

S. coccinea, Linn.

Naturalized, and common about Mount Langton and elsewhere.
(Probably the *S. occidentalis* of Lane's list.)

S. splendens, Ker. Scarlet salvia.

Grows with great luxuriance in gardens; also a blue variety.

Sideritis Romana, Linn.

From Dr. Rein's list.

Scutellaria purpurascens, Swartz.

Lamium amplexicaule, Linn. Dead nettle.

Common by roadsides in Hamilton.

L. purpureum, Linn.

A weed; also common.

Marrubium vulgare, Linn. Horehound.

Leonurus sibericus, Linn.

Naturalized ; occasionally springs up spontaneously.

Leonurus Cardiaca, Linn.

Lavandula spicata, Linn. Lavender.

In gardens.

Thymus vulgaris, Linn. Thyme.

Rosmarinus officinalis, Linn. Rosemary.

LXXXIV.—PLANTAGINÆ.

Plantago lanceolata, Linn. Rib-grass.

P. major, Linn.

P. Virginica, Linn.

Roadside weeds.

LXXXV.—NYCTAGINÆ.

Boerhavia erecta, Linn. Hogweed.

A weed found in cultivated ground at Paynter's Vale; minute apetalous flowers of pale pink. Probably introduced. Common to the West Indies and Southern States; flowers in September.

Mirabilis Jalapa, Linn. Marvel of Peru.

M. dichotoma, Linn. Four o'clock.

Both species are naturalized and almost wild; by roadsides.

Bougainvillea spectabilis, Willd.

Sent to Governor Lefroy, from Gibraltar, in 1874, by Colonel Laffan, R. E., afterward governor. This gorgeous plant has established itself in Bermuda with great rapidity, and is becoming one of its greatest ornaments. It flowers from November to May.

B. glabra.

At Clarence House; imported from the West Indies by Admiral Key.

LXXXVI.—PHYTOLACCÆ.

Suriana maritima, Linn. Tassel plant.

Native and common along the south shores; flowers in May. Common all over the West Indies and tropics generally.

LXXXVII.—POLYGONÆÆ.

Polygonum acre, HBK.

An aquatic weed abundant in ditches in Pembroke marsh. Common in West Indies and Southern States. From *polus*, many; *gonu*, knee; Gr., in allusion to the joints.

Coccoloba uvifera, Linn. South Sea or Seaside grape.

Common; probably native. It grows to a very large size, especially on the south shore behind Ardshields, in Paget Parish. (Girth of largest tree, 6 ft. 4 in.) The fruit is sometimes made into a preserve. Common in the West Indies. The name is from *kokkos*, fruit; *lobe*, a lobe; Gr., being three-lobed.

C. platyclada, Hook.

This plant is common in gardens, and grows to a considerable size, with a thick, woody stem. Originally from the Solomon Island. It flowers in December and January.

Rumex Acetosella, Linn. Common sorrel.

Met with in pastures.

R. obtusifolius, Linn. Dock, *loc.* Rhubarb.

This coarse weed is found in waste places.

Rheum Rhaponticum, Linn. Rhubarb.

Roots procured from the United States in 1872 were a failure, and soon died out.

Antigonon leptopus, Hook. & An. Coral plant.

A native of Mexico, much cultivated in the West Indies for ornament. Introduced at Mount Langton from Barbadoes.

LXXXVIII.—AMARANTACEÆ.

Amarantus spinosus, Linn.

A weed in cultivated ground; common in Southern United States. From a privative, Gr.; *marino*, I wither; allusion to the lasting character of the flower.

A. hybridus, Linn.

Also an American species.

Iresine Herbstii, Hook.

To be found in gardens.

LXXXIX.—CHENOPODIÆ.

Ghenopodium anthelminticum, Linn. Goosefoot family.

A coarse, strong-smelling, perennial weed; probably native; found among rocks and roadsides. Common in West Indies and United States. From *kén*, Gr., a goose, and *pous*, foot; in allusion to the form of the leaves.

C. ambrosioides, Linn.

An annual weed in cultivated ground; probably from West Indies. Native of Mexico.

C. album, Linn.

An annual weed in cultivated ground; from Southern United States (not West Indies).

Atriplex cristata, H. B. (*Obione cristata*, Moquin.) Sea orache.

An erect herbaceous plant common along the north shores, *e. g.*, near the ducking stool, where its spikes of minute male flowers are conspicuous in August and September. The female flowers, which are sessile in the axils of the branchlets, very minute, star-shaped, and of a grayish green color, appear rather later, in small groups of 2-4 flowers. The plant generally is scurfy, of grayish tint, 6" up to 2' high. From *a* privative, Gr., and *trafein*, to nourish.

Salicornia fruticosa, Linn. Var. Marsh Sampphire; Glasswort.

Abundant in salt marshes; stem prostrate or creeping; branches succulent, leafless, cylindrical, erect, jointed, 6 in. to 1½ ft. high; flowers in May. *S. ambigua*, Michx., in Rein's list. *S. herbacea*, Linn., in Lane's list. From *sal*, salt; *cornu* a horn, Lat.

Beta vulgaris, Linn. Beetroot.

In gardens, and cultivated, but to no great extent, for exportation to New York.

XC.—BASELLÆ.

Boussingaultia baselloides, HBK.

Grew luxuriantly over a veranda at Mount Langton, but was accidentally destroyed. I afterwards found it at a cottage on David's Island.

XCI.—LAURINÆ.

Persea gratissima, Gaertn. Avocada or Alligator pear.

Common, and very fine. It is more prized by Bermudians than any other fruit. A tree at Mount Langton, planted about 1835, is now the

finest in the island, and occasionally bears "peers" (*loc.*) of nearly 2 lbs. weight. It is much infested by white coccus. Flowers about March. The fruit is in season from August on to October, and sometimes later. *Persea Indica*, the venhatico of Madeira, was tried but failed. The name *Persea* is applied by Greek writers to another tree.

Laurus nobilis, Linn. Sweet bay tree.

Found in gardens and old plantations.

L. Carolinianum ? Poir.

A tree of considerable size by the roadside west of Paget Church. Flowers in April.

XCII.—PROTEACEÆ.

Leucodendron argenteum, Br. Silver tree.

Many young plants were raised from seed received from the Cape of Good Hope, but none lived beyond a few months.

XCIII.—URTICACEÆ.

Pilea serpyllifolia, Wedd. Lace plant, or Artillery plant.

Common in gardens; introduced.

Bahmeria cylindrica, Willd. False nettle.

Native, and abundant in Pembroke marsh; may be recognized by a general resemblance to a large nettle, especially in the flower found in Florida.

Urtica dioica, Linn. Common nettle.

U. urens, Linn. Small stinging nettle.

U. purpurascens, Nutt.

Distinguishable by the bold notches or saw-teeth on the leaves; all weeds; probably from Europe. The name is from *uro*, I burn, Lat.

Parietaria debilis var. *Floridana*, Nutt. Pellitory.

Found on the walls of the Public Garden, St. George's. From *paries*, Lat., a wall.

XCIV.—MORACEÆ.

Ficus Carica, Linn. Common fig.

The wild fig is nearly exterminated in Bermuda, although a few trees may still be found among the rocks, chiefly in the Walsingham tract. It is a small purple variety, with very deep-cleft 7-lobed leaves. Figs are not among the fruits mentioned by Jourdan or Strachey in 1610.

Rev. Lewis Hughes in 1615 rather refers to them as plants which may be introduced than as if they existed; on the other hand he speaks of "fences of figge and pomegranite trees" in 1621, and they are mentioned in a proclamation of very early date, probably 1616. In 1623 they were abundant enough to be dried for food. This abundance continued down to the present century. It seems probable that they were among the fruit trees introduced by the first settlers in 1612 or 1616, but they may have found the tree already naturalized from seed left by earlier visitors. There are several varieties of fig cultivated at St. George's, the only place where the fruit is tolerably abundant. It did not succeed at Mount Langton, where many trees of different varieties from the United States were planted about 1872.

F. elastica, Roxb. India-rubber tree.

Introduced from South America by the lady of Sir Hildebrand Turner, about 1826; now common. It grows to a very large size; a tree in Hamilton is 12 feet in girth.

F. aurata, Miq.

Introduced at Mount Langton 1875, and very healthy in 1877.

Morus rubra, Linn. Red mulberry.

There is a large tree, wild, among the rocks at Walsingham, and this is the species commonly found in gardens; whether *M. nigra*, the common mulberry, is to be found, is uncertain. The mulberry is mentioned in the earliest narratives, but the writers gave this name to the fruit of *Conocarpus erectus*. The Bermuda Company sent out mulberry seeds in 1616.

M. multicaulis, Perrot. Silkworm mulberry.

Introduced from America by Mr. Daniel Vaughan, about 1841, for feeding silkworms, and planted in many places.

M. macrophylla, Hort. Paper mulberry.

Artocarpus incisa, Linn. Bread fruit.

Introduced at Mount Langton 1874. One or two young trees appeared likely to thrive. Name from *artos*, bread; *karpós*, fruit, Gr.

A. integrifolia, Linn. Jack fruit.

To be found in the garden at Par-la-ville.

Maclura aurantiaca, Nutt. Osage orange.

Introduced by Captain Rollo, Forty-second Regiment, about 1851, by seed from the Mississippi; now naturalized, but uncommon.

M. Xanthoxylon Endl. Tamarind plum.

To be found in the gardens of Mr. H. Trimingham and Mr. Richardson, Paget Parish. Introduced from the West Indies about 1865. The fruit is ripe in September.

XCV.—CELTIDÆ.

Celtis Missisippiensis? Bosc. Nettle tree. Cherry.

Native, but not common. There is a large tree near the Church Cave, and several about the parsonage, Southampton. Flowers in March. (*C. occidentalis*, Linn.?)

Sponia Lamarckiana, Decaisn. No local name discovered.

Native. This plant forms the underwood of a large part of the Walsingham tract, especially near Paynter's Vale, and grows to a straggling tree of considerable size, the largest 38 inches round. It is easily recognized by the roughness of the leaves and shoots. The flowers, which are apetalous, very minute, and obscure in the axils of the leaves, will be found in June. It occurs in the Bahamas and West Indies generally.

XCVI.—PLATANACEÆ.

Platanus occidentalis, Linn. American plane.

Grows well in Bermuda, and is occasionally found about houses. The name is from *platys*, ample, Gr., in allusion to the shade.

XCVII.—MYRICEÆ.

Myrica cerifera, Linn. (*M. punctata*, D. C.) Candleberry myrtle.

Is common in some parts of the island, especially in the grounds of Mount Langton and in Devonshire marsh; it has a habit of growing immediately under and among the roots of the cedar trees. It flowers in March. Probably introduced by natural causes. Name from *myryké*, Gr.; of no application to this species.

XCVIII.—CASUARINÆ.

Casuarina equisetifolia, Forst.

Was abundant a few years ago on Ireland Island; now reduced to one or two trees in the grounds of the captain superintendent; generally taken for tamarisk. Probably introduced from the West Indies, but originally from the South Seas. Name from a slight supposed resemblance of the foliage to the plumage of the cassowary.

XCIX.—SALICINEÆ.

Salix Babylonica, Linn. Weeping willow.

Introduced by Lady Hildebrand Turner, about 1830, and now very common in low grounds.

S. Humboldtiana, Willd. Caraccas willow.

Evidently, from the local name, introduced from Caraccas, and now frequently seen. It grows very readily and rapidly in moist ground.

C.—EUPHORBIACEÆ.

Poinsettia pulcherrima, Gra.

Naturalized and common, growing with great facility from cuttings. Originally from Mexico. This gorgeous plant flowers in November, and for some weeks becomes one of the principal ornaments of Bermuda. Name from Poinsette, a Mexican traveler.

Phyllanthus Niruri, Linn.

An annual weed in gardens; easily known by the minute flowers along the under side of the branches; grows about 1' high. Found in all tropical countries.

Jatropha podagrica, Hook. Gouty-stalked atropa.

Introduced by Mr. S. S. Ingham, 1875.

J. multifida, Linn. Coral plant.

Common in gardens; originally introduced from West Indies. From *iatron*, Gr., a remedy; *fago*, I eat.

J. Curcas, Linn. Physic nut.

Native; to be found in the Walsingham tract. Flowers in June. It is naturalized in all tropical countries.

J. panduræfolia, Andr., or *hastata*, Jacq.

This beautiful species, with deep rose flowers, may be found in Mr. Reid's garden, Hamilton. Flowers in April. A native of Cuba.

J. manihot, Linn. Cassava.

Cultivated as early as 1621, being mentioned by Rev. Lewis Hughes as 'likely to prove a great blessing of God.' Probably then recently introduced from the West Indies. It is still very generally grown, custom having connected the making of "cassava pies" and "cakes" with Christmas festivities, but cassava bread does not enter materially into the diet of any class.

Aleurites triloba, Forst. Otaheite walnut.

Common, and naturalized. The local name would point to its having reached Bermuda from the East Indies, probably about the time of its introduction into the West Indies. From *alcia*, Gr., flour, in allusion to its appearance.

Cicca disticha, Linn. Otaheite gooseberry.

Naturalized, but not common. There is a large tree at Mount Langton. Flowers in May and June; loses its leaves for a short time in winter. (*Phyllanthus longifolius* Jacq.)

Ricinus communis, Linn. Castor-oil plant. Palma Christi.

Common, and completely naturalized, if not native. It appears to be the plant mentioned by Smith as the redweed, in 1623, and was extensively cultivated as the "oyl seed" about 1632. No use is at present made of the fruit. Dr. Pusey's identification of this very quick growing plant with Jonah's gourd, if not quite satisfactory, is at least interesting.

Croton maritimum, Walt.

Native, and common along the south shore. This plant is American and not West Indian, extending from Florida along the Carolinas.

Croton, sp.

Several ornamental varieties were introduced at Mount Langton, 1872-'76, viz, *C. angustifolium*, Hart.; *C. discolor*, Rich.; *C. pictum*, Hort.; *C. teneum*, Mullty.; *C. variegatum*, Forsk. (previously cultivated); *C. undulatum*, *C. cornatus*, Vell. These all appear to thrive in the open air, and will probably become common in gardens hereafter.

Acalypha tricolor, Hort.

Introduced from Barbadoes, 1874; grew well in the open air at Mount Langton; originally East Indian.

Hura crepitans, Linn. Sandbox tree.

There is an old tree in the Public Garden, St. Georges, and it is not uncommonly met with elsewhere. It grows very readily; loses its leaves in winter, recovering them in May; flowers in August.

Pedilanthus tithymaloides, Poit. Arsenic plant. Slipper plant.

Common in gardens, notwithstanding its reputed poisonous properties, its vivid green being pleasing to the eye; West Indian. From *pedilon*, Gr., a slipper; *anthos*, a flower.

Euphorbia buxifolia, Lam., or *glabrata*, Sw.

Common on the rocks along the sea-shores; may be known by the pointed oval leaves overlapping each other along the stem.

E. maculata, Linn.

An annual weed, growing in flat circular patches; of purplish tint.

E. prostrata, Ait.

An annual weed, differing little from *E. maculata*.

E. hypericifolia, Linn.

A tall, erect, annual weed, common in cultivated grounds.

E. heterophylla, Linn. Joseph's coat.

Annual or biennial; grows to a height of 3'. The red patch on some of the upper bracts makes it a conspicuous plant.

E. Peplus, Linn.

Annual weed, of universal diffusion; probably originally from Europe.

E. Jaquinæflora, Hook.

Introduced from Madeira, 1874, and grows freely.

The negro name *Tittimelly* is applied indiscriminately to all these Euphorbias.

E. Candelabrum, Trem.

A fine plant at Bishop's Lodge, from which many cuttings have been taken.

E. splendens, Bojer.

Found in many gardens.

Mercurialis annua, W. Mercury, or Mockery.

Introduced from Europe; a very common weed.

CI.—PIPERACEÆ.

Peperomia obtusifolia, Dietr.

Native, and abundant in the Walsingham tract, where its dark, glossy, succulent leaves and spikes of minute flowers are an ornament to the rocks wherever there is any shade or moisture. A native of the West Indies.

CII.—CERATOPHYLLÆ.

Ceratophyllum demersum, Linn. Ditchweed.

Common in Pembroke marsh, and to northern temperate and tropical zones of all climates.

CIII.—ARISTOLOCHIACEÆ.

Aristolochia trilobata, Linn. Birthwort; Dutchman's pipe.

At Mount Langton and at the Naval Hospital, Ireland Island. Introduced from the West Indies. The name has reference to its supposed virtues in parturition.

CIV.—JUGLANDÆÆ

Juglans nigra, Linn. Black walnut.

One or two specimens are extant at Par-la-ville. The name comes from *Jovis glans*, Lat., the nut of Jove.

CV.—CUPULIFERÆ.

Quercus alba? Linn.

There was a healthy young tree at or near Par-la-ville, Hamilton, in 1875.

The following species, received from the Botanical Gardens, Cambridge, Mass., were planted in the grounds of Mount Langton in 1872, but with little promise of permanency: *Quercus aquatica*, Walt.; *Q. Catesbei*, Michx.; *Q. cinerea*, Michx.; *Q. nigra*, Linn. The plants lingered until 1877, but made no growth.

GYMNOSPERMÆ.

CVI.—CONIFERÆ.

Juniperus Bermudiana, Lun. Bermuda cedar. (*J. Barbadiensis*, Linn.)

The characteristic native forest tree of the Bermudas, which still clothes a very large part of the entire area of the islands. It owes its universality and its success in the struggle for existence apparently to its power of withstanding the gales of wind for which the Bermudas have always been famous. This power again is due to the little resistance offered by the foliage, to the hardness and toughness of the wood, and to the remarkable power possessed by the roots of holding on to the rocks and penetrating their interstices. It can also extract nourishment from almost pure lime, such as coral sands newly thrown up. Cedar roots are said to exist *in situ* in places along the outer reefs. They have certainly been found at 3 to 5 fathoms depth in Elies Harbor and in Hamilton Harbor. Cedar wood in a condition approaching lignite was found at a depth of 47 feet below low-water mark in dredging for a bed for the Bermuda dock. The length of time necessary for a subsidence of 47 feet indicates a very long prevalence of the same conditions. The cedar formerly attained a very great size; planks of 32

inches width are mentioned in the records of the seventeenth century ; there is still standing in Devonshire church-yard the shell of an old tree 59 inches in diameter, and a portion of a trunk 42 inches wide was found below the surface of Pebmroke Marsh in 1872. This tree must have been 6 or 7 feet in diameter. The largest trees now standing and to all external appearances sound are on Long Bird Island and at Daniel's Head ; they are about 11 feet in circumference. Owing to the total neglect of forestry, no attempt ever being made to thin the abundant seedlings which spring up round every pistillate tree, the thickets are much too crowded, and a great proportion of the trees become stag-headed early. Really valuable cedar timber is becoming scarce as the better soils are more and more brought under cultivation, but there is still a great deal suitable for cabinet work, for which its beauty and fragrance recommend it ; and birds'-eye pieces are in considerable demand. The cedar flowers in March, when the staminate trees put on a golden appearance, which adds much to their beauty.

Thuja pyramidalis, Tenor.

There was a tree of some years' standing at Mr. Henry Darrell's, Hamilton, and several promising young plants at Mount Langton.

Araucaria Bidwellii, Hook. The Bunya Bunya of Queensland.

Two plants received from Trinidad in 1875 were well established at Mount Langton in 1877.

A single small *Pinus* at Mr. Shaw Wood's, Spanish Point, was the only other *Conifer* known to the writer until a number of species were received from Cambridge, Mass., and planted out in November, 1874. Of these the following were living in March, 1877, but the majority had made little growth :

Biota Nepaulensis, Endl.

orientalis, Don.

Cupressus funebris, Endl.

Lawsoniana, Murr.

macrocarpa, Hartw.

torulosa, Lamb.

Pinus longifolia, Lamb.

inops, Ait.

pinca, Linn.

Sabiniana, Dougl.

Sequoia gigantea, Torr.

Thuja gigantea, Nutt. Promising well.

T. plicata, Lam.

Torreya Californica, Torr.

Cryptomeria elegans, Veitch. Promising well.

The conclusion must be that few of the fir tribe will grow in Bermuda. The Bahamas species, *Pinus Bahamensis*, Griset., has, however, not been tried. A number of cones were procured, but they had all shed their seed.

CVII.—CYCADEÆ.

Cycas revoluta, Thunb. Sago palm.

This plant is to be found in nearly all old gardens, and was probably introduced from the West Indies, although a native of India. No use is made of the starch it produces.

ADDENDA.

The following orders have been accidentally omitted in their proper sequence:

TAMARISCINEÆ. (To follow order XLII.)

Tamarix Gallica, Linn. Spruce.

Introduced from Europe; now common along the shore roads; is often planted as a screen.

TETRAGONIACEÆ. (To follow order LII.)

Tetragonia expansa, Ait. New Zealand Spinach.

Cultivated as a vegetable for the table.

GENTIANEÆ. (To follow order LXXI.)

Erythraea Centaurium, Pers.

Introduced. (Lane.)

MONOCOTYLEDONS.

I.—CANNACEÆ.

Canna Indica, Linn. Indian shot.

Naturalized, and common in gardens.

C. coccinea, Ait.

Common in gardens.

C. lutea, Ait. Yellow canna.

C. edulis, Ker. Tous-les-mois.

Cultivated to a small extent for the market on St. George's and David's islands; formerly more extensively grown.

Maranta arundinacea, Linn. Arrowroot.

Introduced toward the end of the last century. The exports, which reached 90 tons in 1844, now rarely amount to one-fourth of that quantity simply because other crops are found less exhausting to the soil, and more remunerative. Bermuda arrowroot, however, is still unrivaled in quality. From 15 to 20 lbs. of the starch are made from 100 lbs. of the root.

II.—ZINZIBERACEÆ.

Zingiber officinale, Rosc. Ginger.

Was easily raised at Mount Langton from West Indian roots.

Alpinia nutans, Rosc. Shell plant; Ginger.

Naturalized and common in plantations. (*Renealucia occidentalis*, Gr.) Native of the West Indies and Central America.

Hedychium speciosum? Wall.

From Madeira. Flowered at Mount Langton; originally from the East Indies.

III.—MUSACEÆ.

Musa paradisiaca, Linn. Plantain.

Not much grown in Bermuda. "Plantanes" are mentioned as early as 1621, and were probably among the first vegetable importations from the West Indies.

M. sapientum, Linn. Banana.

There are four well-marked varieties of banana produced in Bermuda, where it is extensively cultivated.

(1.) The red banana (*M. var. rosaceæ*, Jacq.), which is scarce. Owing to the prevalence of high winds, it can only be grown in well-sheltered places, and is about twice as long as any other species in producing fruit.

(2.) The "old Bermuda banana," a tall-growing variety, of very fine quality; now rarely met with.

(3.) The "thumb banana," which is by far the best, although very small, from its subacid flavor and dryness of substance.

(4.) The "dwarf banana" (*M. Cavendishii*, Paxton,) which is the variety commonly cultivated, and occasionally produces bunches of 80 lbs.

weight. These bananas flower and ripen fruit all the year round; but there is considerable difference in the time it takes. A plant flowering in April, with the summer before it, will produce a bunch fit to cut in 90 or 100 days; a plant, flowering in November, with the winter before it, will take 150 or 160 days.

It is almost the only fruit always procurable in Bermuda, but the growth is too much left to chance, little or no horticultural skill being applied to it.

Strelitzia Reginae, Ait. Crane's bill.

To be found in many gardens.

IV.—BROMELIACEÆ.

Ananassa sativa, Mill. Pineapple.

The pineapple was extensively cultivated in Bermuda in the seventeenth century, and is frequently referred to the Records. Its complete disappearance concurs with other indications to suggest that the climate has undergone a change. The mean temperature of Bermuda is much below that of the Bahamas, where they are so largely grown. Several plants were set out in Mount Langton Garden in 1875, but came to nothing, very possibly, however, from not being fresh enough, from insufficient manuring, or for want of skill.

Billbergia farinosa, Hort., and *B. tinctoria*, Mart.

Sent from the Botanic Gardens, Cambridge, Mass., 1874. Failed to establish themselves.

V.—ORCHIDÆÆ.

Spiranthes brevilabris, Lindt. (*Q. S. apiculata*?)

The only native orchid, now tolerably abundant in Devonshire and Pembroke marshes, where it flowers in May; the species is not fully ascertained. Dr. Rein calls it *S. tortilis*, but remarks that he only saw two specimens.

Several common West Indian orchids have been introduced from time to time, and occasionally flower, *e. g.* *Oncidium Papilio*, Lindl., at Cavenish; others at Clarence Hill. The vanilla plant, *Vanilla planifolia*, was imported from Trinidad in 1872, but made little growth, and had not flowered in 1877.

VI.—IRIDEÆ.

Iris violacea, Sweet. Iris.

I. Virginica, Linn.

Sisyrinchium Bermudiana, Linn., loc. Bermudiana.

Native, and universal; classed by Bentham also among native Brit

ish plants; the flowers, which begin to appear in April, are as dear to the Bermudian as the primrose to the Englishman. (*S. anceps* in Lane's list; *S. alatum*, Hook.)

VII.—DIOSCOREÆ.

Dioscorea lutea, Mey. Yam.

The yam is grown in Bermuda, and usually produced at fruit and flower shows, but is rare and does not enter into the ordinary diet of any class of natives. (*D. sativa*, Linn.)

VIII.—NATADEÆ.

Ruppia maritima, Linn. A marsh weed.

Zostera marina, Linn. Sea-wrack; Grass-weed.

Found in shallow sea-water, but not properly a sea-weed.

IX.—PALMÆ.

Blackburniana

Sabal Palmetto, Lodd, or *Chamærops Palmetto*, Michx. Palmetto.

Native, and universal; originally American, not West Indian. The Palmetto furnished the first settlers with a sweet fruit of which they published exaggerated praises; with a vegetable obtained by cutting out the heart of the young leaves; with an intoxicating beverage they called *bibey*; and with covering for their cabins, and even their churches. Hence it is very frequently mentioned, and numerous laws were passed for its preservation. There are trees of 40 to 50 feet high. The leaves are still extensively used for making plat, which was formerly exported. We learn from Raynal that it was fashionable in Europe in the last century. Fans and many fancy articles are also made from them, but the present inhabitants are not sufficiently industrious to make them of commercial value. Flowers in June and July.

S. Adansoni, Guer. Small thatch, or Dwarf palmetto.

Also American, and seldom to be found. It was formerly common and still occurs near Paynter's Vale.

S. Carat and *S. Mucini* were planted at Mount Langton with promise of permanence.

Ovodoxa oleracea, Mart. Cabbage palm.

Introduced. Five conspicuous trees, called the sisters, near Hamilton, attract the attention of every visitor; there are many others.

Astrocaryum aureum, Gr. and Wendl. Gru-gru, or Gri-gri.

Introduced; not common. There are two fine specimens at Mount

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Langton; flowers in June and July, with a strong odor, very disagreeable to many persons. Bermuda is probably the most northern locality of this palm.

Cocos nucifera, Linn. Cocoa nut.

Introduced. The trees are not numerous, and the fruit, although fully formed, is not brought to perfection. It does not occur on sandy beaches, and is not mentioned in any early accounts.

Phoenix dactylifera, Linn. Date palm.

Specimens are not uncommon, but many of them being isolated trees, either staminate or pistillate, the fruit is rarely seen. It is, however, produced, and ripens in St. George's.

Rhapis flabelliformis, Linn.

This pretty little Japanese palm is common in gardens and very readily propagated.

In addition to the above the following were introduced at Mount Langton from the West Indies, and apparently established: *Thrinax Barbadensis*, Todd; *Thrinax elegans*, Hort, Lindl; *Areca Catechu*, Linn.; *Hyophorbe Vershaferlii*, Wendl.; *Livistona Mauritiana*, probably *Chinensis*, Mart.; *L. rotundifolia*, Hort., Lindl.

The following were tried but came to nothing: *Caryota Oummingii*, Lodd.; *Martinezia caryotæfolia*, H. B.; *Phytelephas macrocarpa*, R. P.; *Pritchardia Pacifica*, Seem.

X.—PANDANEÆ.

Carludovica palmata, R. P.

Introduced at Mount Langton in 1872 from the West Indies, and established.

Pandanus utilis, Borg. Screw-pine.

At Mount Langton and elsewhere.

Pandanus odoratissimus, Linn.

Found in the garden of Mr. Saltus. A native of Mauritius.

Pandanus Veitchii, Lem.

Introduced from England, 1874, and established at Mount Langton.

XI.—AROIDEÆ.

Richardia Æthiopica, Kth. Guinea yam, or arum.

Common in gardens.

Dieffenbachia Seguine, Schott. Dumb cane.

Introduced at Mount Langton from the West Indies in 1874. It quite established itself.

Anthurium cordifolium, Kth.

The same remark.

Philodendron lacerum, Schott.

The same remark.

Colocasia esculenta, Schott. Eddoe.

Cultivated and eaten by the colored natives to a small extent.

Caladium. Bleeding heart.

Many ornamental varieties, such as *C. maculatum*, Todd; *C. bicolor*, Vent.; *C. chantini*, Linn.; *C. argyritea*, Lank, &c., were cultivated in the conservatory, Mount Langton, and plants are not uncommon in the island.

Lemna minor, Linn. Duck weed.

L. trisulca, Linn.

Amorphophallus. Snake plant.

The local name is suggested by the mottled appearance of the tall stem, like the skin of a snake. Individuals are occasionally brought up from the West Indies, but it is a plant of Indian origin.

XII.—TYPHACEÆ.

Typha angustifolia, Linn. Catstail.

Native of West Indies, and as *T. latifolia* var. of Florida.

XIII.—LILIACEÆ.

Asparagus officinalis, Linn. Asparagus.

The writer imported about 500 roots in 1872. They produced very slender shoots, and died out in a year or two.

A. Natalensis, Hort.

This pretty plant was received from Trinidad in 1875, and did well.

Allium Cepa, Linn. Onion.

One of the staple products of Bermuda, for which soil and climate seem alike adapted. They were planted by the first settlers in 1616, and at that time probably perpetuated by seed allowed to ripen for the

purpose. At present the seed is imported annually, chiefly from Madeira. Cultivation of the plant on a large scale only dates from about 1845. Seeds of all the best varieties cultivated in Europe were sent from the Royal Gardens, Kew, in 1873, and widely distributed; 16 sorts were tried at Mount Langton. The writer could never ascertain that any of them commended themselves to the growers as superior to the sorts they were accustomed to sow.

Onions in Bermuda are sown in October and November, set out in November or December, and pulled for market in April and May. The export reached the large quantity (for the area of the islands) of 4,180 tons in 1875, which has not since been exceeded.

Aloe vulgaris, Lam.

Locally called, from its flower stalk, bamboo; very common; probably native.

A. soccotrina, Lam. Barbadoes or bitter aloe.

Naturalized and common.

Agave Americana, Linn. Golden aloe.

Not common, but found in many gardens in Paget and Warwick Parishes.

A. Mexicana, Lam. Blue aloe.

At Spanish Point; not common.

A. variegata, Hort.

Common in gardens.

A. striata, Zucc.

Introduced from Kew, 1872.

A. xylonacantha, Salm.

Introduced from Kew, 1872.

A. Jaquiniana, Sch.

Introduced from Cambridge, Mass., 1874.

Yucca serrulata, Haw. Spanish bayonet.

Very common; its tall white spikes of flowers are highly ornamental in May and June (*Y. aloifolia*, Linn., in Dr. Rein's list). *Y. filamentosa*, Linn., and *Y. Whipplei*, Torrey, were among plants received from the Botanical Gardens, Cambridge, Mass., in 1874, which survived and were established at Mount Langton.

Gasterica obliqua, Haw., *G. maculata* Haw., and *Haworthia tortuosa*, Haw., were introduced at Mount Langton from England and are likely to become common in gardens.

Euclearis Amazonica, Lindl.

Imported from the West Indies, 1876, and flowered well.

Lilium candidum, Linn.

Tall white lily; very common in gardens.

L. Japonicum, Thunb.

White Japan lily; also common. Both are largely used as Easter decorations.

Ischarum Boveii? Hook, (Blume, Rumph, i, 29), *loc.* Black lily.

Brought from the neighborhood of Hebron by Mr. and Mrs. T. S. Reid in 1876. The roots, two in number, have thrice flowered in Bermuda towards the end of March. The spadix is described as of a charcoal black, the interior of the spathe resembling a dark, rich, velvet toning in to maroon. (R. Gaz.; 25 March, 1879.)

Narcissus Jonquilla, Linn. Jonquil.

Naturalized and common.

Hyacinthus orientalis. Hyacinth.

Was grown at Mount Langton, but not well.

Ornithogalum latifolium, Linn. Star of Bethlehem, *loc.* Squill.

Naturalized, and met with about old houses.

Cyrtanthus catalpæfolia, Nees.

From Cambridge, Mass., 1874. It flowers well.

Medeola Virginica, Linn.

A small annual weed found under walls. (*M. Carolinea* in Lane's list.)

Eucomis regia, Ait.

Received from Cambridge, Mass., 1874.

Hemerocallis fulva, Linn., W. Day lily.

In gardens.

Gladiolus, sp.

Many varieties are found in gardens. A considerable number of bulbs received direct from the Cape of Good Hope, in 1874, were planted with indifferent success; the flowers were poor; the plants died out.

Sansevieria Guineensis, Willd. Bowstring hemp.

Naturalized, and common in gardens.

Phormium tenax, Forst. New Zealand flax.

Introduced from Kew in 1875, and planted in Pembroke marsh, where, however, it did not flourish, although the plants were living in 1877. They were choked by native weeds.

Polianthes tuberosa, Linn. Tuberose.

To be met with in gardens. Originally a native of India.

Scilla sp.? Squill.

A species is naturalized, and springs up spontaneously about old houses.

Fourcroya gigantea, Vent. Aloe.

Naturalized and common.

Pancratium ovatum, Mill. Spider lily; Churchyard lily.

Naturalized, and common in gardens.

Orinum cruentum, Ker. Giant lily, or Essequibo lily.

Naturalized, and common in gardens.

Amaryllis equestris, Ait. Barbadoes lily.

Naturalized, and common about houses.

A. Sarniensis, Linn. Guernsey lily. (*Nerine sarniensis*, Herb.)

Nerine pulchella, Herb.

Leucoium æstivum Linn. Snowflake.

In the garden at Cavendish; flowers regularly.

Zephyranthes Atamasco, Herb.

Z. rosea, Lindl.

Grown at Mount Langton.

XIV.—SMILACEÆ.

Smilax sagittæfolia, Bot. Mag. Sarsaparilla.

Naturalized at Camden and abundant there, but not often found elsewhere.

Cordyline angustifolia, Hort.

From Cambridge, Mass., 1874; doing well 1877.

Dracæna terminalis, Linn. Purple dracæna.

D. australis, Forst. Green dracæna.

Common in gardens.

XV.—JUNCÆ.

Juncus tenuis, Willd. Rush.

Common in moist places.

J. maritimus, Lane. Large marsh rush.

Native; common in the wetter portions of the marshes.

XVI.—COMMELYNEÆ.

Tradescantia discolor, Herit. Spider-root. Oyster-plant.

Common in gardens.

Tinantia Sprucei, C. B. Clarke.

This plant appeared as a seedling in some partly West India soil at Mount Langton=*Tradescantia erecta*, Jacq.

Commelyna agraria, Kth. Day-flower. (*C. Cayennensis*, Rich.)

Native; and very general in wet places, to which its bright blue flower is an ornament; sometimes called "Chicken-grass."

Cyanotis discolor, L'Herit.

Common in gardens and window-boxes.

XVII.—CYPERACEÆ.

Cyperus rotundus, Linn. Nut-grass.

Native; according to Moseley there are 10 or 12 species.

C. flexuosus, Vahl.

Native.

C. alternifolius, Linn. Variegated cyperus.

Introduced; common in gardens. The name comes from Cypris, a title of Venus.

Kyllingia monocephala, Linn. Sedge.

In Pembroke marsh.

Scirpus validus, Vahl., (*S. lacustris* id). Club-rush.

Common in Pembroke marsh.

S. plantagineus, Roxb., Sw.

In Pembroke marsh, (*Eleocharis*, R. Br.)

S. melanocarpus, Gr.

Cladium occidentale, Schradl. Prickly sedge.

In Pembroke marsh.

Rhynchospora stellata, Gr. White sedge.

Native; abundant in Pembroke marsh.

R. pura, Griseb.

R. Florida, A. Dietr.

From *rhynchos*, a snout or beak; *spora*, a seed, Gr. They are all West Indian.

XVIII.—GRAMINEÆ.

Bambusa vulgaris, Wendl. Cane; Bamboo (which latter term is also applied to the flower stalks of the aloë).

An ornament of lawns and shrubberies, and used for fencing, but not grown to any extent.

Alopecurus pratensis, Linn. Fox-tailed grass.

Arundo Donax, Linn. Cow-cane.

Found in many gardens, and cut as fodder for cattle.

Arundinaria tecta, Muhl.

S. elongatus, R. Br.

S. Virginicus, Kunth.

S. purgans. Kth.

From Dr. Rein's list. Probably *S. pungens*, Kth.

S. Indicus, R. Br.

Polypogon monspeliensis, Desf.

Found among the rocks, North shore.

Leptochloa mucronata, Kunth.

From *leptos*, slender; *choë*-grass, Gr.

Eleusine Indica, Gaertn.

Chloris petræa, Sw.

Cynodon Dactylon, Pers. Devil grass.

In the United States, Bermuda or Scotch grass.

Paspalum distichum, Burm. (*P. littorale*), R. Br.

P. filiforme, Flüg. Wire grass.

P. setaceum, Mich.

Paspalum from the Greek name for millet.

Stenotaphrum Americanum, Schrk.

S. glabrum, Trin. Crab grass.

The general herbage of the country.

Digitaria setigera, Roth. Finger grass.

Sclerochloa rigida, Panzer. Hard grass.

Probably introduced from Europe.

Panicum molle, Swartz. Para grass.

Grown in marshy grounds as cattle food, especially at Camden.

P. maximum, Jacq. Guinea grass.

P. brevifolium, Kunth.

P. capillare, Linn.

P. lineare, Burm.

P. oplismenus.

Found in the cave near Smith's Parish church.

P. variegatum.

This ornamental Australian species was introduced at Mount Langton and lived for 3 years, but never appeared very flourishing.

P. virgatum, Linn.

Gynierium argenteum, Nees. Pampas grass.

Grown at Mount Langton and Clarence Hill.

Setaria glauca, Beauv.

From *seta*, a bristle.

Cenchrus echinatus, Linn.

Common on the Paget sand hills; not, as in Jamaica, used for cattle.

C. tribuloides, Linn.

Kenchros is the Greek name for millet.

Andropogon schænanthus, Linn. Lemon grass.

From *anér*, man; *pogon*, beard, Gr.

Sorghum saccharatum, Mœnch. Guinea corn.

Cultivated as food for cattle. The word is Indian.

Saccharum officinarum, Linn. Sugar cane.

Introduced as early as 1623, but never cultivated to any extent,

although it was thought necessary in 1675 to pass a law to prevent the destruction of cedar for sugar boiling. It is now grown along the margins of water courses, chiefly for sale in sticks, and, not being manured or cultivated properly, possesses but little saccharine quality.

Phalaris Canariensis, Linn. Canary grass.

Grown for cage-birds.

Zea Mays, Linn. Indian corn.

Maize has been cultivated since the earliest settlement of Bermuda. It is mentioned in laws of 1622, and is still the only cereal grown for food. The writer frequently remarked "sports" such, as a bunch of stamens on the cob, or well-formed grains at the head of the plant, on the staminate flower.

Avena sativa, Linn. Oat.

"Grows well for a time, and then dies off before ripening seed. It is generally sown in ground intended for potatoes, and ploughed or dug in." (J. M. Jones.)

Triticum vulgare, Linn. Wheat.

"Grows well in some places, and produces a fair grain. In former years it was more extensively cultivated, and bread was frequently made in farm-houses, but of late years its cultivation has ceased." (*Id.*)

Hordeum vulgare, Linn. Barley.

"Grows well and ripens, but is seldom cultivated as a crop." (*Id.*)

CRYPTOGAMIA.

I.—FILICES.

~~*Selagin*~~
Adiantum cuneatum, Langs. et Fisch. Maiden-hair.

The only native *Adiantum*; universal on rocks where there is shade and moisture, and abundant. The species being Brazilian, not native either to the West Indies or to the United States, its establishment in Bermuda is a matter of some interest.

The following exotic *Adiantums* were cultivated at Mount Langton, and some of them planted out in promising localities about Paynter's Vale, with a view to their introduction: *Adiantum Capillus-Veneris*, Linn.; *A. caudatum*, Linn.; *A. concinnum*, H. D. K.; *A. cultratum*, J. Sen.; *A. Farleyense*, Moore.; *A. intermedium*, Swartz.; *A. macrophyllum*, Swartz.; *A. pedatum*, Linn.; *A. uniforme*, Linn.; *A. tenerum*, Swartz.; *A. trapeziforme*, Linn. *Adiantum pedatum*, Linn., which is a species of northern latitudes, barely lived in the fernery.

Pteris heterophylla, Linn.

Luxuriant and abundant at the Church Cave, but not often found elsewhere, and confined, as far as the writer's observation goes, to the Walsingham tract. It is a Brazilian and Central American species, but occurs in the West Indies also.

P. aquilina, Linn. Bracken.

General over the islands; especially abundant in Pembroke marsh. Perhaps the most universal of all ferns.

In addition to the above, *Pteris longifolia*, Linn.; *P. quadri-aurita*, Retz, and *P. serrulata*, Linnf., were cultivated at Mount Langton, and the first and last set out in suitable localities.

Acrostichum aureum, Linn. Marsh fern.

Abundant in brackish marshes, where it attains a great size. A fern of wide diffusion, found both in Florida and the West Indies. (*Chrysodium vulgare*, Fée.)

Woodwardia Virginica, Smith.

Found only in Pembroke marsh, and not very abundant. The young plants have a general resemblance to *Osmunda cinnamomea*, Linn., but may be distinguished at any stage by the loops in the veins parallel to the midrib of the *pinnæ*, which are radial in *Osmunda*. It is an American and not West Indian species.

Asplenium crenulatum, Fries.

Found chiefly in the Walsingham tract, and not very common. (*A. serratum*, Lindl.) A species of the West Indies and Central America.

A. Trichomanes, Linn.

Generally diffused; common to all northern, temperate, and tropical regions.

A. dentatum, Linn.

This pretty little fern is generally found at the mouths of caves, both in the Walsingham tract and elsewhere. It fills a cave on Grace's Island. It is a native of Florida and the West Indies.

A. myriophyllum, Presl. (*A. cicutarium*, Swartz, Sieb., Mart., 360, Hook., Metten.; *A. rhizophyllum*, Kunze, Hook.)

The rarest of Bermuda ferns; only found about the Church Cave. It is certainly not what is usually labeled *A. cicutarium* in collections. It is native to the West Indies and Southern United States. *Rhizo-*

phyllum seems misleading; it was labeled *Myriophyllum* at Cambridge, Mass., which describes it very well.

The following were also cultivated at Mount Langton: *Asplenium auritum*, Swartz; *A. cicutarium*, Swartz; *A. Fabianum*, Homb.; *A. firmum*, Fée; *A. Nidus*; *A. viviparum*, Presl.

Aspidium Capense, Willd. Devonshire marsh fern.

This beautiful fern is confined to a few spots of Devonshire marsh, and is in danger of extermination, not being abundant. The writer transferred some plants to Pembroke marsh, but they were not established. It requires much shade and moisture. Habitat, America from Cuba to Patagonia, South Africa, and Polynesia.

Nephrodium amplum, Baker.

Common by roadsides. A Central American and West Indian species.

N. patens, Desm.

Very common by roadsides; a fern which does not require moisture. Native of Florida, Texas, and Central America; not West Indian.

N. tetragonum, Hk.

Confined to the Walsingham tract, and not common. It belongs to Central America, and occurs neither in Florida nor the West Indies.

N. villosum, Presl.

Pretty abundant; one of the ferns found in dry places. It is native of the West Indies and Central America.

N. Thelypteris, Desv.

Found along the north side of Pembroke marsh, and not elsewhere; it dies down in winter. It is generally diffused in northern latitudes.

Nephrodium molle, Desm., from the West Indies, was planted out in suitable places.

Nephrolepis exaltata, Schott.

Common among the rocks of Walsingham and elsewhere. The species belongs both to the United States and the West Indies.

Polypodium elasticum, Rich.

Found chiefly in the Walsingham tract, and not very common. (*P. cultratum*, Willd.) A native of Cuba and Central America.

Osmunda regalis, Linn.

Grows in abundance in Pembroke marsh; not found in the West Indies, but otherwise a fern of very wide range.

Osmunda cinnamomea, Linn.

Abundant also in Pembroke marsh. Native of the United States and the West Indies.

Blechnum occidentale, Linn.

Was planted out in suitable places in 1877.

Besides the ferns which have been enumerated above, the writer introduced and cultivated the following species, nearly all of which are readily grown with a little protection. The temperature of the air in the fernery by self-registering thermometers ranged from 48° to 87° in the year: *Anemia adiantifolia*, Sw.; *Oheilanthes microphylla*, Swartz; *Oystopteris bulbifera*, Bernh.; *C. fragilis*, Bernh.; *Davallia aculeata*, Swartz; *D. Canariensis*, Smith; *Dicksonia punctilobula*, Hook.; *Gymnogramme calomelanos*, Kaulf.; *G. sulfurea*, Desv.; *G. tartarea*, Desv.; *G. tomentosa*, Desv.; *Hemionitis palmata*, Linn.; *Lomaria gibba*, Labill.; *Onoclea sensibilis*, Linn. (which, however, did not flourish); *Pellaea Breweri*, Eaton; *P. hastata*, Link; *P. rotundifolia*, Hook.; *Polypodium aureum*, Linn.; *P. vulgare*, Linn. (brought from Ireland); *P. divergens*, Hook.; *P. Dryopteris*, Linn. (which did not flourish); *P. marginellum*, Sw.; *Scolopendrium vulgare*, Sm. (brought from Ireland); *Trichomanes crispum*, Linn. (which could not long be kept alive). This enumeration may have some interest for future horticulturists in Bermuda.

II.—EQUISETACEÆ.

Equisetum palustre, Linn.? Jointed marsh-weed.

Pembroke marsh. Common in West Indies and United States.

III.—LYCOPODIACEÆ.

Psilotum triquetrum, Sw.

Rare, but found about some of the caves in the Walsingham tract.

Selaginella Martensii, Spreng.

Found in gardens.

The following were also introduced from Kew: *S. Griffithsii*, Spreng.; *S. furcata*, Har.; *S. hæmatodes*, *S. inæquifolium*, *S. Martensii*, var. and *stolonifera*, Swartz; *S. viticulosa*, *S. Wallichii*; all of which grew well in a fernery.

IV.—CHARACEÆ.

Chara foetida, A. Br.

This plant is abundant in wet ditches at Mount Langton.

V.—HEPATICÆ.

Jungermannia, sp.

Sphagnum palustre. Bog moss.

VI.—FUNGI.

The common mushroom, *Agaricum campestris*, Linn., appears rarely in Bermuda. They were to be found in 1852 near Pembroke churchyard. (Mr. Hurdis, in *The Naturalist in Bermuda*, p. 176.) The writer has, however, never seen them wild. They were grown at Mount Langton in an artificial cave from spawn imported from Halifax, and at times pretty abundant. The *fungi* of Bermuda, as an order, have not received attention.

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C. <i>stans</i> , Juss	95	B. <i>Vigna luteola</i> , Benth	65
TEREBINTHACÆ	62	C. <i>Vinca rosea</i> , Linn., var. <i>alba</i>	88
C. <i>Tetragoniaria</i> , Linn	110	C. <i>rosea</i> , Linn	88
C. <i>Tetragonia expansa</i> , Ait	110	<i>VIOLACÆE</i>	50
C. <i>Thespesia populnea</i> , Correa	53	C. <i>Viola odorata</i> , Linn	50
C. <i>Thevetia nerifolia</i> , Juss	88	C. <i>tricolor</i> , Linn	50
C. <i>Thrinax Barbadosensis</i> , Todd	114	VITACÆE. See AMPELIDÆE	60
C. <i>elegans</i> , Hort, Lind	114	C. <i>Vitis vinifera</i> , Linn	60
C. <i>Thuja gigantea</i> , Nutt	110	C. <i>Volkameria aculeata</i> , Linn	97
C. <i>plicata</i> , Lam	110	A. <i>Waltheria americana</i> , Linn	54
C. <i>pyramidalis</i> , Tenor	109	C. <i>Wistaria frutescens</i> , DC	64
C. <i>Thunbergia</i> , Hook	96	A. <i>Woodwardia Virginica</i> , Willd	123
B. <i>Thymus vulgaris</i> , Linn	99	B. <i>Xanthium echinatum</i> , Murr	86
TILLIACÆE	54	<i>Xanthoxylum clava-Herculis</i>	56
C. <i>Tinantia sprucei</i> , Gært	119	<i>Youngia lyrata</i> , Cass., syn	83
B. <i>Torilis nodosa</i> , C. B. Clarke	79	<i>Yucca aloifolia</i> , Linn., syn	116
C. <i>Torreya californica</i> , Torr	110	C. <i>filamentosa</i> , Linn	116
A. <i>Tournefortia gnaphalodes</i> , R. Br	91	A. <i>serrulata</i> , Haw	116
A. <i>laurifolia</i> , Vent	91	C. <i>Whipplei</i> , Torrey	116
C. <i>Tradescantia discolor</i> , Herit	119	A. <i>Xanthoxylum aromaticum</i> , Willd	56
C. <i>erecta</i> , Jacq. syn	119	C. <i>Zea mays</i> , Linn	122
C. <i>Trifolium pratense</i> , Linn	64	C. <i>Zephyranthes Atamasco</i> , Herbach	118
B. <i>repens</i> , Linn	64	C. <i>rosea</i> , Lindl	118
C. <i>Triphasia trifoliata</i> , DC	58	C. <i>Zinnia elegans</i> , Jacq	85
C. <i>Triticum vulgare</i> , Linn	122	C. <i>Zingiber officinale</i> , Rose	111
<i>Triumfetta althæoides</i> , Lam. syn	54	ZINZIBERACÆE	111
A. <i>lappula</i> , Linn	54	A. <i>Zostera marina</i> , Linn	113
A. <i>semitriloba</i> , Linn	54	ZYGOPHYLLIÆ	55

